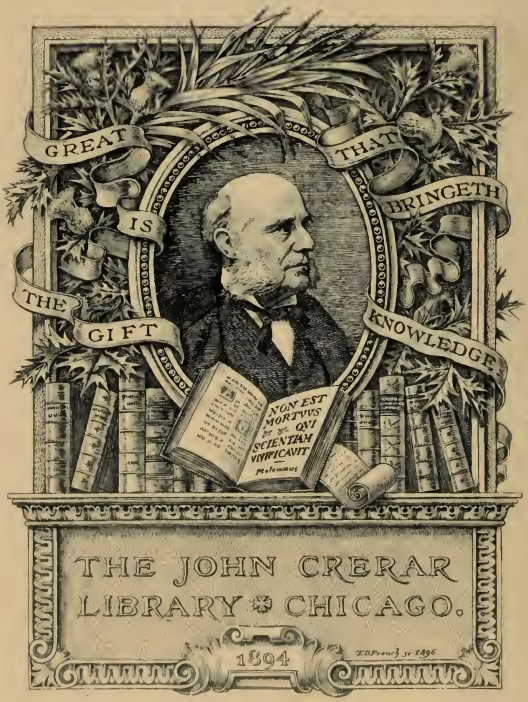

GREAT IS THE GIFT THAT BRINGETH KNOWLEDGE
NON EST MORTVVS QVI SCIENTIAM VIVIFICAVIT
Ptolemaus
THE JOHN CRERAR LIBRARY CHICAGO.
1894

U. of I. Maps.
1936

Digitized by the Internet Archive
in 2012 with funding from
University of Illinois Urbana-Champaign

http://archive.org/details/catalogueofu1113univ

78.788
WcH1

University of Colorado

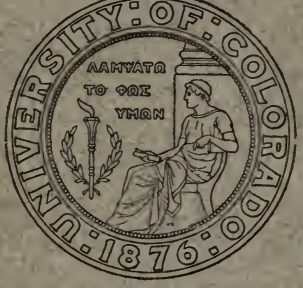
BULLETIN

Volume 12 - Number 1

BOULDER, COLORADO, MARCH, 1912

Published Quarterly by the Regents of the University of Colorado

Entered at the Post Office, Boulder, Colorado, as second-class mail matter



CATALOGUE, 1911-1912

University of Colorado
BULLETIN

Volume 12 - Number 1

BOULDER, COLORADO, MARCH, 1912

Published Quarterly by the Regents of the University of Colorado
Entered at the Post Office, Boulder, Colorado, as second-class mail matter

CATALOGUE, 1911-1912

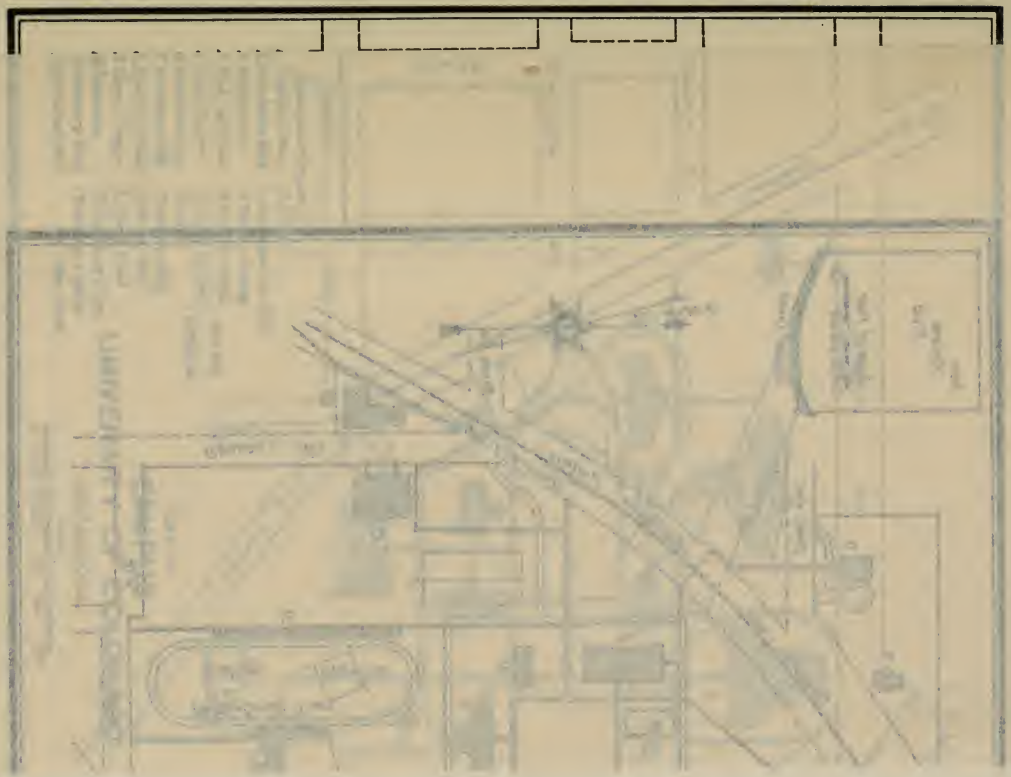
THE
NAVIGATION
LIBRARY

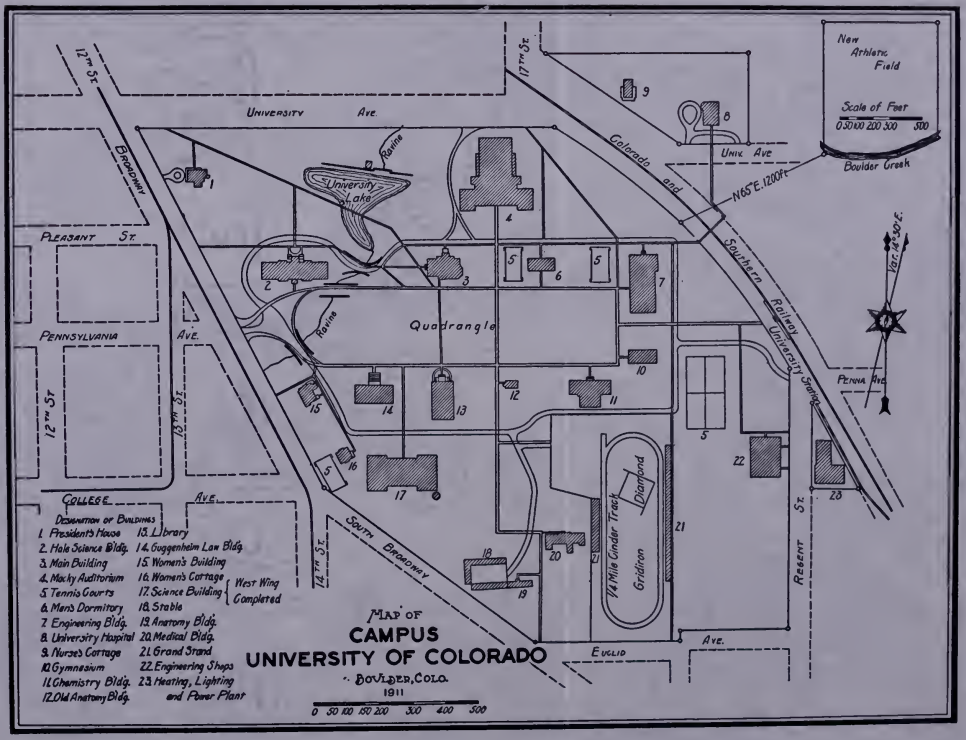
The
University of Colorado
Catalogue, 1911-1912

With
Announcements for
1912-1913

Boulder, Colorado, March, 1912

HCP




12th St.
Broadway
University Ave.
17th St.
Colorado and Southern Railway
University Siding
New Athletic Field
Scale of Feet
0 50 100 200 300 500
Boulder Creek
Univ. Ave.
N 65° E. 1200 ft.
Ruins
University Lake
Pleasant St.
Pennsylvania Ave.
Quadrangle
Penna Ave.
13th St.
College Ave.
14th St.
South Broadway
Regent St.
Euclid Ave.
Diamond
Gridiron
¼ Mile Cinder Track
Var. 14° 30' E.
1 President's House
2 Hale Science Bldg.
3 Main Building
4 Macky Auditorium
5 Tennis Courts
6 Men's Dormitory
7 Engineering Bldg.
8 University Hospital
9 Nurse's Cottage
10 Gymnasium
11 Chemistry Bldg.
12 Old Anatomy Bldg.
13 Library
14 Guggenheim Law Bldg.
15 Women's Building
16 Women's Cottage
17 Science Building (West Wing Completed)
18 Stable
19 Anatomy Bldg.
20 Medical Bldg.
21 Grand Stand
22 Engineering Shops
23 Heating, Lighting and Power Plant
MAP OF CAMPUS UNIVERSITY OF COLORADO
BOULDER, COLO.
1911
0 50 100 150 200 300 400 500

1912 CALENDAR 1912

	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
Jan.	--	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31	--	--	--
	--	--	--	--	--	--	--
Feb.	--	--	--	--	1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	--	--
	--	--	--	--	--	--	--
Mar.	--	--	--	--	--	1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31	--	--	--	--	--	--
Apr.	--	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	--	--	--	--
	--	--	--	--	--	--	--

	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
May	--	--	--	1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	--
	--	--	--	--	--	--	--
June	--	--	--	--	--	--	1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	--	--	--	--	--	--
July	--	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31	--	--	--
	--	--	--	--	1	2	3
Aug.	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31
	--	--	--	--	--	--	--
	--	--	--	--	--	--	--

	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
Sept.	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	--	--	--	--	--
	--	--	--	--	--	--	--
Oct.	--	--	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	31	--	--
	--	--	--	--	--	--	--
Nov.	--	--	--	--	--	1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	--	--	--	--	--	--	--
Dec.	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31	--	--	--	--
	--	--	--	--	--	--	--

1913 CALENDAR 1913

	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
Jan.	--	--	--	1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	--
	--	--	--	--	--	--	--
Feb.	--	--	--	--	--	--	1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	--
	--	--	--	--	--	--	--
Mar.	--	--	--	--	--	--	1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31	--	--	--	--	--
Apr.	--	--	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	--	--	--
	--	--	--	--	--	--	--

	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
May	--	--	--	--	1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31
	--	--	--	--	--	--	--
June	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	--	--	--	--	--
	--	--	--	--	--	--	--
July	--	--	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	31	--	--
	--	--	--	--	--	--	--
Aug.	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31	--	--	--	--	--	--
	--	--	--	--	--	--	--

	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
Sept.	--	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	--	--	--	--
	--	--	--	--	--	--	--
Oct.	--	--	--	1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	--
	--	--	--	--	--	--	--
Nov.	--	--	--	--	--	--	1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	--	--	--	--	--	--
Dec.	--	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31	--	--	--
	--	--	--	--	--	--	--

ANNOUNCEMENTS

1912.

Jan. 17, Wednesday ... Meeting of Board of Regents.
Jan. 29, Monday ..... Second Semester begins.
Feb. 12, Monday ..... Lincoln's Birthday (Holiday).
Feb. 22, Thursday .... Washington's Birthday (Holiday).
March 23, Saturday to
March 31, Sunday ... Spring Recess.
April 17, Wednesday .. Meeting of Board of Regents.
April 19, Friday ..... Arbor Day (Holiday).
May 18, Saturday ..... High-School Day.
May 30, Thursday .... Decoration Day (Holiday).
May 31, Friday ..... All examinations completed.
June 1, Saturday ..... Phi Beta Kappa Exercises.
Sigma Xi Exercises.
June 2, Sunday ..... Baccalaureate Address.
Annual Address before the Christian Associations.
June 3, Monday ..... Senior Class Play.
Meeting of Board of Regents.
June 4, Tuesday ..... Class Day Exercises and Parade.
President's Reception.
Alumni Exercises and Reception.
Senior Promenade.
June 5, Wednesday ... Commencement.
Alumni Banquet.
June 6, Thursday .... Summer Vacation begins.
June 24 to August 3 .. Summer Session.
Sept. 2, Monday ..... Meeting of Board of Regents.

375.788
UcH1
309781
136273

ACADEMIC YEAR, 1912-1913

Sept. 9, Monday ..... First Semester begins; Assembly of Students at 11:00; Examinations and Presentation of Certificates; Registration (Registration begins Friday, Sept. 6).

Oct. 12, Saturday ..... Columbus Day.

Nov. 5, Tuesday ..... General Election Day (Holiday).

Nov. 13, Wednesday .. Meeting of Board of Regents.

Nov. 28, Thursday ... Thanksgiving Day (Holiday).

Nov. 29, Friday ..... Holiday.

Dec. 21, Saturday to
Jan. 5, Sunday ..... Winter Recess.
1913.

Jan. 15, Wednesday .. Meeting of Board of Regents.

Jan. 27, Monday ..... Second Semester begins.

Feb. 12, Wednesday .. Lincoln's Birthday (Holiday).

Feb. 22, Saturday .... Washington's Birthday.

March 22, Saturday to
March 30, Sunday .... Spring Recess.

April 18, Friday ..... Arbor Day (Holiday).

April 23, Wednesday .. Meeting of Board of Regents.

May 17, Saturday .... High-School Day.

May 30, Friday ..... Decoration Day (Holiday).
All examinations completed.

May 31, Saturday .... Phi Beta Kappa Exercises.
Sigma Xi Exercises.

June 1, Sunday ..... Baccalaureate Address.
Annual Address before the Christian Associations.

June 2, Monday ..... Senior Class Play.
Meeting of Board of Regents.

June 3, Tuesday ..... Class Day Exercises and Parade.
President's Reception.

June 3, Tuesday..... Alumni Exercises and Reception.
Senior Promenade.
June 4, Wednesday ... Commencement.
Alumni Banquet.
June 5, Thursday .... Summer Vacation begins.
June 23 to August 2 .. Summer Session.
Sept. 1, Monday ..... Meeting of Board of Regents.

BOARD OF REGENTS

CHARLES R. DUDLEY, LL.B.....*Denver*
Term expires, 1912.
JOSEPH C. BELL, LL.B.....*Trinidad*
Term expires, 1912.
*RALPH TALBOT, B.A.....*Denver*
ALVA B. ADAMS, Ph.B., LL.B.....*Pueblo*
Term expires, 1914.
ETHELBERT B. ADAMS, LL.B.....*Telluride*
Term expires, 1914.
WILLIAM J. KING.....*Villa Grove*
Term expires, 1916.
ANNA L. WOLCOTT.....*Denver*
Term expires, 1916.

OFFICERS OF THE BOARD

JAMES H. BAKER.....Boulder ..... President
FRANK H. WOLCOTT.....Boulder ..... Secretary
CHARLES H. CHENEY.....Boulder ..... Treasurer

COMMITTEES OF THE BOARD

EXECUTIVE—Messrs. Dudley, Bell, Baker.
AUDITING—Mr. Dudley, Miss Wolcott, Mr. Baker.
BUILDINGS AND GROUNDS—Messrs. Bell, Dudley, Baker.
FINANCE—Messrs. E. B. Adams, A. B. Adams.
LIBRARY—Messrs. King, A. B. Adams, Smith.
INSTRUCTORS—Messrs. Baker, Dudley, A. B. Adams.

* Died, June 28, 1911.

*ADVISORY BOARD

	Town.	County.
George A. Garard	*Brighton*	*Adams*
		Arapahoe
Allen J. Nossaman, M.D.	*Pagosa Springs*	*Archuleta*
William Hooker	*Springfield*	*Baca*
Harry L. Lubers	*Las Animas*	*Bent*
Thomas Butler	*Longmont*	*Boulder*
George H. Curfman, M.D.	*Salida*	*Chaffee*
E. P. Hickman	*Cheyenne Wells*	*Cheyenne*
Bernard J. O'Connell	*Georgetown*	*Clear Creek*
Albert A. Stover	*Idaho Springs*	*Clear Creek*
Frederick W. Swanson	*Alamosa*	*Conejos*
Charles Groenendyke	*San Luis*	*Costilla*
		Crowley
John H. Leary	*Westcliffe*	*Custer*
Burton P. Smith	*Delta*	*Delta*
Gustave C. Bartels	*Denver*	*Denver*
William H. Bryant	*Denver*	*Denver*
†Charles L. Dickerson	*Denver*	*Denver*
Clayton C. Dorsey	*Denver*	*Denver*
Irving Hale	*Denver*	*Denver*
Horace N. Hawkins	*Denver*	*Denver*
A. Dupont Parker	*Denver*	*Denver*
Frank E. Shepard	*Denver*	*Denver*
John W. Springer	*Denver*	*Denver*
Thomas B. Stearns	*Denver*	*Denver*
Charles MacAllister Willcox	*Denver*	*Denver*
		Dolores
John Anderson	*Castle Rock*	*Douglas*
James Dilts	*Eagle*	*Eagle*
William D. Reilly	*Kiowa*	*Elbert*
Joseph F. Humphrey	*Colorado Springs*	*El Paso*
Robert Kerr	*Colorado Springs*	*El Paso*
Clyde C. Dawson	*Canon City*	*Fremont*
James G. Johnston	*Florence*	*Fremont*

* The members of the Advisory Board are appointed by the Regents for a term of one year. The service is without compensation. Annual meeting of the Advisory Board, at the University, Tuesday and Wednesday of Commencement Week.

† Died, December 1, 1911.

	Town.	County.
Barnette T. Napier	*Glenwood Springs*	*Garfield*
Chase Withrow	*Central City*	*Gilpin*
David P. Howard	*Sulphur Springs*	*Grand*
John A. Lehrritter	*Gunnison*	*Gunnison*
Benjamin F. Cummings, M.D.	*Lake City*	*Hinsdale*
Charles Hayden	*Walsenburg*	*Huerfano*
Thomas D. Baird, M.D.	*Walsenburg*	*Huerfano*
Owen S. Case	*Walden*	*Jackson*
William G. Smith	*Golden*	*Jefferson*
Raymond Miller	*Galatea*	*Kiowa*
William D. Selder	*Burlington*	*Kit Carson*
Charles Cavender	*Leadville*	*Lake*
Charles A. Pike	*Durango*	*La Plata*
Frank J. Annis	*Fort Collins*	*Larimer*
Edward H. Day	*Trinidad*	*Las Animas*
Archibald McIntyre	*Hugo*	*Lincoln*
William L. Hays	*Sterling*	*Logan*
Horace T. DeLong	*Grand Junction*	*Mesa*
Albert L. Moses	*Creede*	*Mineral*
		Moffat
Leonard H. Clark, M.D.	*Mancos*	*Montezuma*
Abijah Johnson, M.D.	*Montrose*	*Montrose*
Moncellus L. More	*Fort Morgan*	*Morgan*
Robert W. Patterson	*La Junta*	*Otero*
William W. Rowan, M.D.	*Ouray*	*Ouray*
Charles A. Wilkin	*Fairplay*	*Park*
R. G. McKibben	*Holyoke*	*Phillips*
Ewing C. Guthrie, M.D.	*Aspen*	*Pitkin*
John C. Horn	*Lamar*	*Prowers*
Alva Adams	*Pueblo*	*Pueblo*
Hume Lewis	*Pueblo*	*Pueblo*
James Lyttle	*Meeker*	*Rio Blanco*
Robert G. Breckenridge	*Monte Vista*	*Rio Grande*
Benjamin F. Niesz	*Steamboat Springs*	*Routt*
Charles Tarbell	*Saguache*	*Saguache*
Clarence O. Finch	*Silverton*	*San Juan*
Stephen A. Bailey	*Telluride*	*San Miguel*
Bertrand D. Parker, Jr.	*Julesburg*	*Sedgwick*
William F. Forman	*Breckenridge*	*Summit*

	Town.	County.
Griffith R. Lewis	*Cripple Creek*	*Teller*
Nelson Franklin	*Victor*	*Teller*
Harold D. Thompson	*Cripple Creek*	*Teller*
Egbert More	*Akron*	*Washington*
George D. Statler	*Greeley*	*Weld*
Thomas B. Groves	*Wray*	*Yuma*

COLLEGES AND SCHOOLS OF THE UNIVERSITY

The Colleges and Schools of the UNIVERSITY OF COLORADO are the following:

I. COLLEGE OF LIBERAL ARTS:
Courses leading to the degree B.A.

II. COLLEGE OF COMMERCE:
Courses leading to the degree B. A. and special certificate.

III. COLLEGE OF EDUCATION:
Courses leading to the degree B.A. and special certificate.

IV. SCHOOL OF SOCIAL AND HOME SERVICE:
Courses leading to certificate of work done.

V. GRADUATE SCHOOL, leading to the degrees M.A. and Ph.D.; also M.S., C.E., E.E., M.E.

VI. COLLEGE OF ENGINEERING:
Civil Engineering, leading to the degree B.S. (C.E.).
Electrical Engineering, leading to the degree B.S. (E.E.).
Mechanical Engineering, leading to the degree B.S. (M.E.).
Chemical Engineering, leading to the degree B.S. (Ch. E.).

VII. SCHOOL OF MEDICINE, leading to the degree M.D.

VIII. SCHOOL OF PHARMACY, leading to degrees Ph.C., B. Phar., and B.S. in Phar.

IX. SCHOOL OF LAW, leading to the degree LL.B.

X. SUMMER SESSION.

XI. UNIVERSITY EXTENSION:
Lectures and study centers.
Correspondence work.
Library extension.
Bulletins of investigations.
Various similar lines of service.

*GENERAL FACULTY

JAMES H. BAKER, M.A., LL.D., President.

J. RAYMOND BRACKETT, Ph.D.,
Dean of the Graduate School; Professor of Comparative and English Literature.

LUMAN M. GIFFIN, M.D.,
Professor of Surgery.

IRA M. DELONG, M.A.,
Professor of Mathematics.

MOSES HALLETT, LL.D.,
Dean of the Law School and Professor of American Constitutional Law, *Emeritus*.

JOHN CHASE, B.A., M.D.,
Professor of Ophthalmology and Otology.

THOMAS E. TAYLOR, B.A., M.D.,
Professor of Obstetrics.

ALBERT A. REED, LL.B.,
Professor of Law.

WILLIAM B. CRAIG, M.D.,
Professor of Surgery.

E. BARBER QUEAL, M.D.,
Professor of Physiology.

FRED B. R. HELLEMS, Ph.D.,
Dean of the College of Liberal Arts; Professor of Latin.

GEORGE H. CATTERMOLE, M.D.,
Professor of Medicine (Pediatrics).

CHARLES C. AYER, Ph.D.,
Professor of Romance Languages.

* Professors, Assistant Professors, Lecturers and Instructors are arranged in the order of appointment. Assistants rank as their departments. Within the general Faculty are organized the Advisory Council, Senate, and Faculties of the several colleges and schools.

*Frank E. Waxham, M.D.,
Professor of Rhinology and Laryngology.

William H. Bryant, B.S., LL.B.,
Professor of Law.

George Norlin, Ph.D.,
Professor of Greek.

Francis Ramaley, Ph.D.,
Professor of Biology.

Charles S. Elder, M.D.,
Professor of Surgery (Gynecology).

Newton Wiest, M.D.,
Professor of Dermatology.

Edwin Van Cise,
Professor of Law.

Melanchthon F. Libby, Ph.D.,
Professor of Philosophy.

John Burton Phillips, Ph.D.,
Secretary of the College of Commerce; Professor of Economics and Sociology.

William H. Pease, B.A., LL.B.,
Professor of Law.

John Bernard Ekeley, Ph.D., Sc.D.,
Professor of Chemistry.

John Campbell, M.A., LL.B., LL.D.,
Dean of the Law School, *Emeritus;* Professor of Law of Private and Municipal Corporations.

Russell D. George, M.A.,
Professor of Geology.

John D. Fleming, B.A., LL.B., LL.D.,
Dean of the Law School; Professor of Law; Associate Judge of Practice Court.

James R. Arneill, B.A., M.D.,
Professor of Medicine (Clinical Medicine).

Milo S. Ketchum, C.E.,
Dean of the College of Engineering; Professor of Civil Engineering.

Richard W. Corwin, M.D., LL.D.,
Professor of Surgery.

* Died, September 4, 1911.

CHARLES B. LYMAN, M.D.,
Professor of Surgery.

JOHN M. FOSTER, M.D.,
Professor of Oto-laryngology.

EDWARD JACKSON, M.A., M.D.,
Professor of Ophthalmology.

HERBERT S. EVANS, E.E.,
Professor of Electrical Engineering.

JOHN A. HUNTER, M.E.,
Professor of Mechanical Engineering.

THEODORE D. A. COCKERELL,
Professor of Systematic Zoology.

WILLIAM P. HARLOW, B.A., M.D.,
Dean of the Medical School.

GEORGE M. CHADWICK,
Professor of Music.

JAMES F. WILLARD, Ph.D.,
Professor of History.

OLIVER C. LESTER, Ph.D.,
Professor of Physics.

FRANK E. THOMPSON, B.A.,
Secretary of the College of Education; Professor of Education.

ROSS C. WHITMAN, B.A., M.D.,
Secretary of the School of Medicine, Denver Division; Professor of Pathology.

JUNIUS HENDERSON, B.A.,
Professor of Natural History; Curator of Museum.

JOHN S. MCLUCAS, M.A.,
Professor of English.

GRACE FLEMING VAN SWERINGEN, Ph.D.,
Professor of German.

OSCAR M. GILBERT, M.D.,
Professor of Medicine (Clinical Medicine).

ALVIN R. PEEBLES, M.D.,
Professor of Medicine (Theory and Practice.)

CLOUGH T. BURNETT, M.D.,
Professor of Bacteriology.

MILO G. DERHAM, Ph.D.,
Professor of Latin.

SAUL EPSTEEN, Ph.D.,
Secretary of the Graduate School; Professor of Engineering. Mathematics.

LAWRENCE W. COLE, Ph.D.,
Professor of Psychology and Education.

GEORGE E. NEUHAUS, M.D.,
Professor of Neurology and Psychiatry.

HENRY SEWALL, Ph.D., M.D.,
Professor of Medicine.

EDMUND J. A. ROGERS, M.A., M.D.,
Professor of Surgery.

ROBERT LEVY, M.D.,
Professor of Oto-laryngology.

WILLIAM H. DAVIS, M.D.,
Professor of Dermatology and Genito-Urinary Diseases.

WILLIAM J. ROTHWELL, M.D.,
Professor of Medicine.

FRANCIS H. MCNAUGHT, M.D.,
Professor of Obstetrics.

LEONARD FREEMAN, B.S., M.A., M.D.,
Professor of Surgery.

JOSIAH N. HALL, B.S., M.D.,
Professor of Medicine.

CHARLES A. POWERS, M.A., M.D.,
Professor of Surgery (Clinical Surgery).

CHARLES F. SHOLLENBERGER, M.D.,
Professor of Medicine (Pediatrics).

HOWELL T. PERSHING, M.S., M.D., LL.D.,
Professor of Neurology and Psychiatry.

EDWARD C. HILL, M.S., M.D.,
Professor of Chemistry (Toxicology).

HERBERT B. WHITNEY, B.A., M.D.,
Professor of Medicine (Pediatrics).

HORACE G. HARVEY, B.A., M.D.,
Professor of Surgery.

SHERMAN G. BONNEY, M.A., M.D.,
Professor of Medicine.

MOSES KLEINER, M. D.,
Professor of Therapeutics.

GEORGE B. PACKARD, M.D.,
Professor of Surgery (Orthopedics.)

T. MITCHELL BURNS, M.D.,
Professor of Obstetrics.

WALTER A. JAYNE, M.D.,
Professor of Surgery (Gynecology and Abdominal Surgery).

CHARLES B. VAN ZANT, M.D.,
Professor of Physiology.

MELVILLE BLACK, M.D.,
Professor of Ophthalmology.

WILLIAM C. MITCHELL, M.D.,
Professor of Bacteriology.

DAVID H. COOVER, M.D.,
Professor of Ophthalmology.

SAMUEL B. CHILDS, B.A., M.D.,
Professor of Roentgenology.

JAMES H. PERSHING, B.A.,
Professor of Medical Jurisprudence.

WILLIAM C. BANE, M.D.,
Professor of Oto-laryngology.

GEORGE H. STOVER, M.D.,
Professor of Roentgenology.

F. GILLETT BYLES, M.A., M.D.,
Professor of Hygiene.

JAMES C. TODD, B.Ph., M.D.,
Secretary of the School of Medicine, Boulder Division; Professor of Pathology.

JOSEPH C. HUTCHISON, M.S., M.D.,
Professor of Obstetrics.

WILLIAM H. SHARPLEY, M.D.,
Professor of Medicine (Contagious Diseases.)

CARBON GILLASPIE, M.D.,
Professor of Anatomy.

HOMER C. WASHBURN, B.S., Ph.C.,
Professor of Pharmacy.

ARTHUR J. MARKLEY, D.D.S., M.D.,
Professor of Dermatology.

RALPH D. CRAWFORD, M.A.,
Assistant Professor of Geology.

DAVID R. JENKINS, E.E.,
Assistant Professor of Electrical Engineering.

CLEMENT C. WILLIAMS, C.E.,
Assistant Professor of Civil Engineering.

WALTER W. REED, M.D.,
Assistant Professor of Obstetrics.

S. ANTOINETTE BIGELOW, M.A.,
Dean of Women; Assistant Professor of Literature.

FROST C. BUCHTEL, M.D.,
Assistant Professor of Surgery.

CHARLES H. WILLIAMS, B.A., B.S. in Ed.,
Assistant Professor of Education.

JACOB CAMPBELL, M.D.,
Assistant Professor of Surgery.

EDWARD F. DEAN, M.D.,
Assistant Professor of Surgery (Clinical Surgery).

AUBREY H. WILLIAMS, M.D.,
Assistant Professor of Surgery (Clinical Surgery).

HUGH BUTLER,
Lecturer on Common Law Pleading.

ROBERT S. MORRISON,
Lecturer on Laws of Mines and Mining.

CHARLES S. THOMAS, LL.B.,
Lecturer on Law of Evidence.

LUCIUS M. CUTHBERT, M.A., LL.B.,
Lecturer on Roman Law.

JOHN A. RINER, LL.B.,
Lecturer on International Law.

CHARLES D. HAYT,
Lecturer on Law of Taxation.

WILLARD J. WHITE, M.A., M.D.,
Lecturer on Medical Jurisprudence.

ERNEST L. WILLIAMS, LL.B.,
Lecturer on Appellate Procedure.

JAMES W. MCCREERY,
Lecturer on Law of Irrigation and Water Rights.

JOHN E. ROBINSON,
Lecturer on Bankruptcy.

EDWARD DELEHANTY, M.D.,
Lecturer on Neurology.

OLIVER LYONS, M.D.,
Lecturer on Genito-Urinary Diseases.

ALFRED R. SEEBASS, Ph.G., M.D.
Lecturer on Life Insurance Examinations.

HARRY S. SILVERSTEIN, B.A.,
Lecturer on Criminal Procedure.

FORDYCE P. CLEAVES, M.A.,
Instructor in Oratory.

FRED G. FOLSOM, B.A., LL.B.,
Instructor in Law; Judge of Practice Court.

EDWARD B. TROVILLION, M.D.,
Instructor in Anatomy.

FRANK R. SPENCER, B.A., M.D.,
Instructor in Ophthalmology and Oto-laryngology.

MARGARET S. CARHART, M.A.,
Instructor in English.

HARRY A. CURTIS, B.S. (Ch.E.), M.A.,
Instructor in Chemistry.

ADOLPH G. PIERROT, Ph.B.,
Instructor in English.

WILLIAM R. BRACKETT, B.A.,
Instructor in Physics.

MILDRED S. MACARTHUR, M.A.,
Instructor in German.

GUY W. SMITH, B.S. (E.E.), M.S.,
Instructor in Engineering Mathematics.

HARLAND C. WOODS, C.E.,
Instructor in Engineering Drawing.

CLAY E. GIFFIN, B.A., M.D.,
Instructor in Surgery.

HENRY S. DENISON, B.A., M.D.,
Instructor in Medicine.

EASLEY S. JONES, M.A.,
Instructor in English.

ELVA COOPER, M.A.,
Instructor in Mathematics.

ARNOLD J. LIEN, M.A.,
Instructor in Economics.

WILLIAM V. CASEY,
Instructor in Education.

SIEBELT L. SIMMERING, B.S. (M.E.),
Instructor in Mechanical Engineering.

JOHN W. AMESSE, M.D.,
Instructor in Medicine.

GERARD L. C. M. VAN ROSSEN HOOGENDIJK, Ph.D.,
Instructor in Chemistry.

S. GRISWOLD MORLEY, Ph.D.,
Instructor in Romance Languages.

CHARLES F. POE, M.A.,
Instructor in Chemistry.

CLARENCE B. INGRAHAM, Ph.B., M.D.,
Instructor in Obstetrics.

PAUL M. DEAN, M.A.,
Instructor in Chemistry.

WHITNEY C. HUNTINGTON, B.S. (C.E.),
Instructor in Civil Engineering.

ETHEL R. FORD, B.A.,
Instructor in English.

CARL M. DUFF, B.S. (C.E.),
Instructor in Engineering Mathematics.

MAX M. ELLIS, Ph.D.,
Instructor in Biology.

ARTHUR G. VESTAL, B.A.,
Instructor in Biology.

CARL C. ECKHARDT, Ph.D.,
Instructor in History.

HAROLD E. ROBBINS, M.A.,
Instructor in Physics.

SAMUEL S. KINGSBURY, Ph.D.,
Instructor in Education.

J. WARREN STEHMAN, M.A.,
Instructor in Economics.

REX E. EDGECOMB, B.S. (C.E.),
Instructor in Civil Engineering.

CHARLES D. FAWCETT, B.S. (E.E.),
Instructor in Electrical Engineering.

FRANK S. BAUER, B.S. (M.E.),
Instructor in Mechanical Engineering.

HERBERT D. MCCASLIN, B.S. (M.E.),
Instructor in Mechanical Engineering.

WILLIAM WILEY JONES, B.A., M.D.,
Director of Clinics and Clinical Laboratory.

TRACY R. LOVE, Ph.B., M.D.,
Instructor in Physiology and Pharmacology.

WILLIAM MACLEOD RAINE, B.A.,
Instructor in Journalism.

PHILLIP HILLKOWITZ, B.S., M.D.,
Instructor in Serum Therapy.

DONALD MCFAYDEN, M.A., S.T.B.,
Instructor in Biblical History and Literature.

WILLIAM E. DITTMAN, C.P.A.,
Instructor in Modern Accounting.

M. ADELAIDE MOYS, B.A.,
Assistant in Latin.

CLEOPHILE BELL, M.A.,
Assistant in Literature.

GEORGIA L. FIELD, M.A.,
Assistant in Literature.

CARL E. SALOMON, M.A.,
Assistant in Literature.

CLARIBEL KENDALL,
Assistant in Mathematics.

IDA M. JOHNSON, B.A.,
Assistant in Romance Languages.

MARY MORSE,
Assistant in Romance Languages.

LORENA UNDERHILL, Ph.B.,
Assistant in Philosophy.

WALTER S. LOVELACE, B.A.,
Assistant in Economics.

WINTHROP W. LEACH,
Assistant in Chemistry.

ROBERT J. GROOM,
Assistant in Chemistry.

PHILIP G. WORCESTER, M.A.,
Assistant in Geology.

HARRY A. AURAND,
Assistant in Geology.

ELOIE C. DYER, B.A.,
Assistant in History.

RAYMOND J. VENABLES, B.A.,
Assistant in History.

CORNELIUS J. MARVIN,
Assistant in Physics.

HUGH C. PRYOR, B.A.,
Assistant in Education.

JESSIE RODGERS, B.A.,
Assistant in Education.

NELLIE M. EPPERSON, B.A.,
Assistant in Education.

FLORENCE MAY MORSE, B.A.,
Assistant in Education.

VICTORIA H. HAZLITT, B.A.,
Assistant in Education.

FANNIE J. BOSWELL, M.A.,
Assistant in English.

S. ELIZABETH LOYD,
Assistant in English.

RUTH M. SHELLEDY, B.A.,
Assistant in German.

CAROLINE L. HABERMANN, B.A.,
Assistant in German.

MAURINE TILLEY, B.A.,
Assistant in German.

J. CLARENCE DEVOSS, B.A.,
Assistant in Psychology.

EDNA M. REYNOLDS,
Assistant in Psychology.

FRANK L. BROWN, B.S. (C.E.),
Assistant in Civil Engineering.

WALTER F. MALLORY,
Assistant in Mechanical Engineering.

VICTOR C. MOULTON,
Assistant in Engineering Drawing.

GUY S. NEWKIRK,
Assistant in Engineering Drawing.

EDITH K. ROSS,
Assistant in Pathology and Bacteriology.

FRED E. HAGEN, B.A.,
Secretary and Registrar.

C. HENRY SMITH, Ph.B.,
Librarian in Charge.

FAITH E. FOSTER,
Assistant Librarian.

ELIZABETH M. PHILLIPS,
Assistant Librarian.

ROY O. HILLS,
Assistant in Library.

FLOYD B. ODLUM,
Assistant in Library.

OLIVER C. WILSON, B.A.,
Law Librarian.

EUGENE A. BOND,
Assistant in Law Library.

EARL E. WRIGHT,
Assistant in Law Library.

FRANK R. CASTLEMAN, B.S.,
Director of Physical Training and Athletics.

EDNA POTTER,
Instructor in Gymnasium.

EARL E. WRIGHT,
Assistant in Gymnasium.

ELVA COOPER, M.A.,
Assistant in Gymnasium.

MARY A. LAKE, M.D.,
Physical Examiner for Women in Gymnasium.

JOSEPH KLEMME,
Superintendent of Buildings and Grounds.

GENERAL STATEMENT

ESTABLISHMENT

The Constitution of the State of Colorado provides for the election, by the people at large, of a Board of Regents of the State University, and defines its duties as follows: "*The Board of Regents shall have the general supervision of the University, and the exclusive control and direction of all funds of, and appropriations to, the University.*" The President of the University is *ex officio* a member of the Board of Regents and its presiding officer. The laws providing for the government and maintenance of the University were passed by the General Assembly of Colorado, March 15, 1877. Its object, as defined by that act, is, "*To provide the best and most efficient means of imparting to young men and women, on equal terms, a liberal education and thorough knowledge of the different branches of literature, the arts and sciences, with their varied applications.*"

HISTORY

The University of Colorado was incorporated by an act of the Territorial Legislature of 1861, and the location fixed at Boulder. In 1871 three public-spirited citizens gave the University fifty-two acres of land adjoining the city. In 1874, the Territorial Legislature appropriated $15,000, and the citizens of Boulder contributed a like sum in cash. In 1875, Congress set apart and reserved seventy-two sections of the public lands for the support of the State University. In 1876 the Constitution of Colorado provided that upon its adoption the University at Boulder should become an institution of the State, thus entitling it to lands appropriated by Congress, and further made provision for the management and control of the University. The first General Assembly of the State provided for its permanent support by the levy of a tax of one-fifth of a mill upon the property of the State; also, for a fund to be secured by the sale of lands granted by the United States. In 1903, the General Assembly increased the annual levy from one-fifth to two-fifths of a mill.

The Institution was opened September, 1877, with two departments, Preparatory and College. The Medical School was opened in 1883. In September, 1892, a Law School was established, Graduate courses were first formally offered, and the gradual withdrawal of the Preparatory classes from the University was begun. The College of Engineering was opened in 1893. The Summer Session was established in 1904. In September, 1906, a College of Commerce was established. The Preparatory School was discontinued in 1907. The Department of Education was organized as a College of Education in 1908. The School of Pharmacy was opened September, 1911.

The University is supported by the proceeds from a two-fifths mill tax, and by special appropriations.

LOCATION

The University is located at Boulder, a thriving city of twelve thousand inhabitants, about thirty miles north from Denver. The campus is situated on an elevation on the south side of the city and commands to the east a fine view of Boulder Valley, dotted with numerous small lakes, a rich agricultural and fruit-raising district. To the west a mile distant are the foothills, the boldest and highest of the range, and beyond is seen the ever snow-capped summit of Arapahoe Peak. In the canons and along the mountain roads, the scenery is grand and beautiful. To the north is Long's Peak, rising nearly fifteen thousand feet above sea level, while to the south is a series of beautiful mesas extending from the foothills. A trip on the Denver, Boulder & Western Railroad, extending thirty miles into the mountains, is a favorite excursion for tourists. The healthfulness of the climate of Colorado is well known. The city is located on that plateau east of the Rocky Mountains which "has the finest climate in the world." The dry air and almost continuous succession of bright, cloudless days make Boulder a very desirable location for residence. Many young men and women who have been compelled to leave college both in the East and South on account of ill health, are able to pursue their studies here without interruption. The altitude of Boulder is 5,335 feet above sea level.

CHAUTAUQUA

The Colorado Chautauqua is located in Boulder. The fifteenth session will open July 4 and continue until August 16. A summer

school is connected with the Chautauqua. Lecturers and instructors of national reputation are employed. The previous sessions have been remarkably successful in point of attendance and excellence of programme. The secretary is Mr. F. A. Boggess, Boulder, Colorado.

BUILDINGS

Heating, Lighting and Power Plant—A new plant, furnishing heat, light and power for the campus has been recently finished east of the Shops Building. It contains a boiler room forty by seventy-four feet and an engine room fifty by eighty-six feet. The structure is built of stone. A concrete tunnel 1,700 feet in length has been built from the power plant to distributing points on the campus. This tunnel contains all pipes and wires necessary for heating, lighting and power purposes.

Macky Auditorium—The Auditorium is now under roof, and work on the interior is in progress. The funds for the erection of this building were provided by the will of the late Andrew J. Macky. The building is two hundred and thirty-four feet by two hundred and sixty-four feet in plan. Stone with lighter stone trimmings is being used. The estimated cost of the building is nearly $300,000. The main auditorium will seat 3,000 people and there will be four minor rooms in the wings for smaller audiences. The administrative offices will be located temporarily in one wing. The basement under the whole structure will be finished to accommodate large University and student functions.

Library Building—The Library Building is a two-story structure, built of gray brick and white sandstone. The central portion is sixty-five by one hundred and fifteen feet. Two wings are to be added.

Woodbury Hall—This building is three stories in height above the basement, and is constructed of gray and red sandstone. It is heated by steam and supplied with hot and cold water, bath rooms, etc. The rooms are in suites of three rooms each—a sitting room for study, twelve by fourteen feet, and two bed rooms, each ten by twelve feet, with commodious closets.

Woman's Building—The Woman's Building is a two-story brick structure, containing the offices of the Dean of Women, the Woman's

League and the Young Women's Christian Association. There are also a large club room and a kitchen. The upper floor contains twelve bed rooms.

Woman's Cottage—This is a two-story brick building, containing twelve rooms.

Gymnasium—The Gymnasium Building is of such dimensions that it may be used on occasions as a general assembly hall. The building is well heated, ventilated and lighted, and contains a large exercise room, dressing rooms, shower baths, lockers, etc. It is equipped with the usual appliances.

President's House—This is a two-story brick house of ten rooms.

Main Building—The Main Building is a four-story brick structure, containing lecture and recitation rooms for the College of Liberal Arts, the administrative offices, the auditorium, and the art rooms.

Pharmacy Building—This building is a two-story brick structure.

Hale Science Building—The Hale Science Building is a four-story building of stone, sixty by one hundred feet in plan, with two wings, each fifty-one by fifty-two feet in area and two stories high. The second or main floor in the wings contains two lecture rooms, each with a seating capacity of over two hundred students. The entire lower story is occupied by the physics department; the second story of the central part by the mathematical and romance languages departments; the third by the biological and zoological departments.

Chemistry Building—The Chemistry Building is constructed of red pressed brick, trimmed with red sandstone, and contains two stories and a basement. It is forty by one hundred and twenty-five feet in plan with a wing forty by sixty feet.

New Science and Museum Building—One wing of a Science and Museum Building was completed in January, 1911. The plan of the entire building is two hundred and twenty-five by one hundred and twenty-one feet. This is to be devoted to Geology, Biology, and the Museum.

Engineering Building—A two-story brick building with basement is devoted to the use of the College of Engineering. The building is one hundred and seventy-seven by eighty-five feet in plan. It is designed with special reference to engineering work, and is well fitted with machinery and instruments.

Shops Building—The Shops Building is located at the extreme east end of the campus, covering a space ninety-three by one-hundred and twenty-two feet. It is built of red brick and sandstone. The first, or front section, is two stories, with wood shops on the first floor and drawing rooms on the second floor; the remaining portion is one-story, containing the machine shop, forge shop, and foundry. All the rooms are well lighted, heated, and ventilated, and the most modern construction is used throughout.

Medical Building—The Medical Building is a brick structure, consisting of a central portion and three wings. It contains lecture rooms and laboratories for pathology, bacteriology, practical physiology and pharmacology. Adjoining is a temporary structure for anatomy.

Medical Building (In Denver)—The Medical Building in Denver is a three-story and basement stone building, located at the corner of Thirteenth and Welton Streets. It is exceptionally well located for its purpose. It contains two lecture rooms, laboratories for work in pathology and the various branches of clinical diagnosis, smaller rooms for section and demonstration work, and rooms for the several departments of the Dispensary.

Hospital—The Hospital is a three-story brick building, situated on the bluff overlooking the creek, city and surrounding country. In plan and equipment it is in every way modern and complete.

Nurses' Home—The Nurses' Home is a one-story frame cottage, situated west of the Hospital. It contains eight rooms, and is well adapted in every way to its purpose.

Simon Guggenheim Law Building—Donated by Senator Simon Guggenheim. This is a three-story building of gray brick and gray sandstone, one hundred and fifteen by fifty-two feet in plan. It contains class rooms, offices, moot court room and library, and is planned exclusively for the School of Law.

UNIVERSITY LIBRARY

The Library consists of 61,030 bound volumes; also 30,000 pamphlets, and 1,226 maps; besides a mass of unbound material, the accumulation of years, which is being catalogued as rapidly as possible. The library system is composed of the main library and fourteen department branch libraries. Direct access to shelves is the rule. The main library is open to all during term time from 7:45 a. m. to 10:00 p. m., week days, except Friday and Saturday, when the closing hour is 9:00 p. m. During vacations the hours are 9:00 a. m. to 5:00 p. m., week days. It is closed on legal holidays.

The main library occupies the central portion of the Library Building, erected in 1903. The plans contemplate lateral wings for a large reading room on the one side and seminar rooms and cataloguing rooms on the other, and an addition in the rear for stack room. The library is equipped with two tier steel stacks with a capacity of 30,000 volumes. As this shelving has been outgrown, temporary wooden stacks have been built in the basement with a capacity of 20,000 volumes. Two hundred and seventy-five people may be seated at the different reading tables at one time. Books for frequent reference line the east wall. Current general periodicals are arranged along the west wall. A card catalogue containing upwards of 97,000 cards, giving authors and subjects, is accessible for reference. The well lighted basement contains the newspaper reading room, with sixty dailies and a collection of bound newspapers, a library work room, the tables reserved for use by the debating squad, and the temporary book stacks. Alcoves for seminar work are provided in the two balconies.

The Library is a designated depository for United States Government publications and receives a copy of each document of a public nature. It also receives the publications of the Carnegie Institution of Washington, D. C.

The staff consists of the Librarian, two trained assistants and two student assistants, and in addition, a senior law librarian and two student assistants.

The resources of the Library are extended to high-school students throughout the State, upon request of their superintendent. Aid to high-school student efforts in oratory, debating and special study is constantly given.

A class in library science and practice is conducted by members of the staff, supplemented by lectures from invited members of the profession.

Inter-library loans for advanced students engaged in research work have been arranged for with the largest libraries of the country. Any book on any subject may now be secured.

The Library possesses bound files of most of the important general periodicals listed in Poole's Index and the Readers' Guide, and a comprehensive collection of encyclopædias, dictionaries and atlases, both American and foreign.

The periodical list is especially noteworthy. Besides a well rounded list of general cultural magazines the list includes 288 subscriptions to the leading scientific and technical magazines, chosen with a view of procuring the best periodical literature upon all branches of instruction offered by the University. The full lists of periodicals, etc., are as follows: Periodicals, 418; annuals, continuations, and occasional publications, 164; scientific and literary publications by exchange and gift, 262; libraries contributing bulletins and publications, 49; newspapers, 63; total, 956.

The Law Library occupies room No. 31, Guggenheim Law Building. This spacious room on the second floor has adequate shelving for the present collection of 4,029 volumes. This Library includes gifts of books from Hon. Moses Hallett, and the "C. I. Thomson Collection," numbering a thousand volumes, presented by Mrs. C. I. Thomson. The library has a complete set of the National Reporter System, English Reprints, English reports, American statutes, U. S. Supreme Court reports, sets of State statutes and reports, the better known digests, legal treatises and encyclopædias. These sets are constantly kept up to date by continuations. A growing collection of text-books on the law is constantly consulted. A very complete file of the Colorado Supreme Court and the Colorado Court of Appeals briefs is at hand. Sets of bound law magazines and authoritative current legal periodicals are on file. The Library is open ten hours each week-day under the supervision of a senior law librarian and two student assistants. A subject card catalogue is provided.

The Engineering Library in room 27, Engineering Building, contains the literature of civil, electrical and mechanical engineering, and engineering drawing. Sets of proceedings of the leading

engineering societies, and bound sets of standard periodicals with the current numbers of forty magazines, and a select collection of texts upon engineering subjects form a useful working library.

The Medical Library is temporarily shelved in the north balcony of the Library Building. The collection is well balanced, and is increasing through gifts and purchases. The major portion is composed of text-books. Several sets of bound medical magazines are at hand, together with the current numbers of fifty of the leading American and foreign medical journals.

Additional department libraries are maintained for Biology, Chemistry, Education, Geology, German, Mathematics, Physics, and the Museum.

THE UNIVERSITY PUBLICATIONS

1. Catalogue, published in March, containing general information about the University and its separate departments.

2. Summer Session Catalogue.

3. The special Announcements of the Departments of Medicine, Law, Engineering, Education, and of the Graduate School, published in June.

4. The biennial report of the Regents of the University, recording the progress of the Institution during the previous biennial period, and showing the University budget of receipts and expenditures for the same period. Published biennially in October.

5. The University of Colorado Studies, published at irregular intervals, and containing original contributions by members of the University Faculties.

6. Medical Bulletin, published by the Medical Department.

7. University Extension Bulletins on various subjects of investigation.

8. The Booklet of Views, containing half-tone cuts of the buildings and grounds.

9. The University News-Letter, published at intervals of three months, and containing current news of the University.

10. General Catalogue of the Officers, Members of the Faculties, and Graduates of the University from the opening of the Institution, published triennially.

11. The Commencement Addresses, containing the Baccalaureate Address and the Commencement Oration, published in June.

These publications may be obtained by application to the Secretary of the University.

STUDENT PUBLICATIONS

The Silver and Gold, a tri-weekly paper, named after the University colors, and a monthly literary magazine, called *The Colorado Magazine*, are published by the students.

The Coloradoan, an annual, is published by each Junior Class.

The Journal of Engineering is published annually, and *The Colorado Engineers' Magazine*, quarterly by the students of the College of Engineering.

The University of Colorado Hand-Book is published annually by the Christian Associations.

The Civic Quarterly is published by the Civic Club.

THE UNIVERSITY SCIENTIFIC SOCIETY

The University Scientific Society was founded in 1888, for the purpose of affording a common meeting ground for all those interested in scientific subjects—students and townspeople, as well as the members of the University faculty. The growth of the more specialized scientific societies rendering necessary a reorganization in 1907, the constitution was changed to meet the need felt for a society in which topics of a wider university interest could be discussed. Regular meetings of the Society are held every Monday evening at eight o'clock. The papers read before these meetings are intended to set before the members some of the results of modern investigation in literature, language, and history, as well as in more strictly scientific work in the natural sciences.

HONOR SOCIETIES

Three honor societies, to which students of high scholastic standing are eligible, have chapters at the University of Colorado. Phi Beta Kappa elects to membership senior students in the College of Liberal Arts. Sigma Xi offers membership to graduate and under-graduate students who have shown special ability in scientific investigations. Tau Beta Pi is a technical society, selecting members from students in the College of Engineering.

STUDENT LITERARY SOCIETIES AND CLUBS

Literary societies and debating clubs are organized and conducted each year by the students.

The Richard's Literary Society comprises in its limited membership both men and women, and aims to promote all dramatic, oratorical, and literary activities. It maintains yearly a series of inter-school debates and open meetings, and takes part in the celebration of national holidays.

The Scribblers' Club aims to develop talent in original literary work. Meetings are held every two weeks, the programmes consisting entirely of poems, essays, sketches, or stories written by the members. Membership is open to both men and women.

The University of Colorado Debating Society was organized for the purpose "of cultivating a correct mode of speaking and qualifying its members by practice to express their opinions in public in a correct manner." The Society spends most of its time in senate and parliamentary practice. Membership is open to men of the University who are interested in debating and oratory.

The Scoop Club limits its membership to students who have had experience in newspaper reporting.

The Civic Club, composed of students interested in political and governmental problems, is a member of the Intercollegiate Civic League. This club publishes the Civic Quarterly.

The History Conference Club is composed of students and instructors in the Department of History. Its meetings are devoted to a study of historical problems and of contemporary history.

The University Dramatic Club is organized for the purpose of promoting dramatic study. Rehearsals are held regularly under the supervision of the Instructor in Oratory, and one or more public presentations are given during the year.

The University of Colorado Graduate Club is organized for literary and scientific discussions.

The Civil Engineers' Society, the Electrical Engineers' Society —a student branch of the American Institute of Electrical Engineers, and the Mechanical-Chemical Society have been organized by the students in the College of Engineering. These societies meet every two weeks. In each original papers on questions of technical

interest are presented and discussed. These three societies joined as "The Associated Engineering Societies" publish the Journal of Engineering.

MUSICAL ORGANIZATIONS

The University double quartet and the instrumental quartet make an annual tour of the state during the spring vacation.

The University band of twenty-five members furnishes music for the various general University functions, also giving a concert in the Spring in connection with the other musical organizations.

All musical organizations are under the direction or general supervision of the Professor of Music, members being selected by competitive examinations.

CHRISTIAN ASSOCIATIONS

The Young Men's Christian Association and the Young Women's Christian Association have organizations in the University, which are open to members of the faculties and students of all departments.

Regular weekly religious services and also classes for the study of the Bible and world-wide missions are held separately by each Association.

Vesper services are held in the Chapel under the auspices of these organizations.

Resident Secretaries are employed by the Associations, and their services are at the disposal of prospective students and their friends. A copy of the Students' Handbook, which is issued by the Associations, and is descriptive of life at the University, is furnished upon request.

The Y. W. C. A. conducts a Board and Room Register, a Book Exchange, and a Self-Help Bureau for the convenience of women students at the opening of each school year. The Y. W. C. A. offices are in the Woman's Building, and are open at all times to the women of the University.

The Y. M. C. A. has offices in the Main Building. A permanent employment bureau is conducted.

Church attendance is optional, but students are advised to attend some one of the numerous churches in town. The churches

in Boulder are Baptist, Catholic, Christian, Christian Science, Congregational, Episcopal, Lutheran, Methodist, Presbyterian, Seventh Day Adventist, Seventh Day Baptist, Swedish Baptist and Swedish Lutheran.

CHAPEL EXERCISES

The period from 11:00 to 11:30 is set apart for daily assembly of students. During this period no class or lecture work is conducted.

On Monday, Tuesday, Wednesday, and Thursday, the attendance is required for the first, second, third, and fourth chapel divisions, respectively, and a brief address is given by a member of the Faculty or by some speaker invited for the occasion. The attendance on other days is voluntary. On Friday, after Scripture reading and a hymn, time is allowed for various student meetings.

STUDENT PASTOR

In the fall of 1909 the Synod of the Presbyterian Church of Colorado appointed Rev. J. Wilson Currens, M. A., to represent that denomination in the University. He is a pastor not only to the students of his own denomination, but also to those of other denominations.

HIGH-SCHOOL DAY

The observance of High-School Day has been made one of the regular features of the academic year. The purpose of this day is to afford to the senior students of the High Schools an opportunity of visiting the State University, inspecting its buildings and grounds and so far as possible learning the scope and spirit of its life and work. The railroads make special rates for High-School Day, and thus place a visit to the University within the reach of most of the High-School students of the State.

ALUMNI ASSOCIATION

The University of Colorado Alumni Association was organized in 1882. Its purposes are to aid in promoting the interests of the University of Colorado, and to cultivate sociability and good fellowship among its members. The annual meeting and annual dinner of the Association occur at the University during Commencement Week. Local alumni associations have been formed in the princi-

pal cities and towns in Colorado, and in a number of the larger cities in other states.

The present officers are: Harry A. Curtis, 1908, 1910, President; Philip S. Van Cise, 1907, 1909, Vice-President; Mrs. Gertrude F. Currens, 1900, 1908, Secretary and Treasurer; Herman Weinberger, 1908, 1910, and Jessie Fitzpatrick, 1908, Executive Committee.

The alumni have recently adopted a new constitution which will supersede that of the present Association. The new organization is called The Associated Alumni of the University of Colorado. Legislative and executive powers are vested in an Alumni Senate, composed of representatives from each local association, according to its membership, and ten representatives of the alumni at large, elected by a postal ballot. Provision is made through the initiative and referendum for united action of the alumni if desired. Annual meetings are to be held at the University on Alumni Day. The organization meeting of the Senate will be held at the University in March, 1912.

THE ASSOCIATED STUDENTS

The student body is organized into an association known as "The Associated Students of the University of Colorado." Through this Association the students act collectively in all their University relations. There are three executive boards—the Commission, the Athletic Board and the Debating Board. The Commission controls general interests and the other two boards the activities indicated by the names; together they appoint the general manager who has direct control of, and responsibility for, every student enterprise of general interest. By the payment of a $5.00 fee any student, alumnus, or member of the faculties is entitled to admission to all local contests, games or other events under the Association's auspices. Provision is made in the Constitution for a careful supervision of student funds, for the recall of any officers and for the initiative and referendum.

The officers for the present year are: President, Todd C. Storer, B.A.; Vice-President, Frank A. Kemp; Secretary, Bernice A. Salter; General Manager, Herman Weinberger, B.A., LL.B.; Yell-master, Robert R. O'Brien The members of the Commission are the president, the vice-president, the secretary and the yell-master, and Professor John B. Ekeley, C. Beattie Johnson, John F.

McFadden, Bernard J. Seeman, and John D. Rich. The members of the Athletic Board are Professor George Norlin, Professor Oliver C. Lester, Professor John A. Hunter, the president of the Associated Students, Frank A. Kemp and John F. McFadden. The members of the Debating Board are Professor John S. McLucas, Professor William H. Pease, Professor Charles C. Ayer, the president of the Associated Students, Bernard J. Seeman, and C. Beattie Johnson.

ORATORICAL AND DEBATING INTERESTS

Public debates and oratorical contests are held under the management of the Debating Board of the Associated Students. This Board has power to regulate debating and oratorical contests in all of their forms—intercollegiate, inter-school, and inter-class.

The Debating Board conducts each year prize contests. Cash prizes are given.

The University holds annual debates with other state universities—this year with the universities of Kansas, Missouri, Oklahoma and Utah.

The University of Colorado Debating Society and the Richard's Literary Society hold an annual debate, contending for a handsome silver trophy cup. Last year the debate was won by the Richard's Literary Society. The debating team consists of the honor men of the debating class, which is under the direct supervision of the debating coach. Any person in the University may enter the class, provided he has registered before October 1.

The Debating Board arranges programmes for the observance of national holidays that fall within the academic year.

THE BENNETT PRIZE

The Bennett prize is awarded annually at Commencement for the best essay on *The Principles of Free Government.* Any student in the University may compete. The prize awarded is the income of the sum of $400 presented to the Regents of the University by Hon. William J. Bryan, Trustee for Philo Sherman Bennett.

PHYSICAL TRAINING AND ATHLETICS

Systematic training in physical culture is given in formal gymnasium classes, and in the main branches of in-door and out-door

sports. All these are under the competent supervision of the Director of Athletics, with the aid of three assistants in the gymnasium and a graduate medical attendant for women. During the football season a coach and an assistant coach are employed for this sport.

For the most part the athletic training is on a voluntary basis, but a formal course in physical culture is required of the freshman class in the College of Liberal Arts.

The climate is such as to make out-of-door recreation and games agreeable during most of the year. Adequate training and coaching are given to football, baseball, track athletics, cross-country running, basketball; and this spring special attention is to be given to tennis.

It is the purpose of the University to stimulate interest in the greatest possible variety of wholesome games and sports. The policy of developing highly specialized inter-collegiate teams is subordinated to that of providing suitable forms of corrective and upbuilding exercise for all members of the student body.

The present athletic field being inadequate, the University has recently acquired twelve acres north and east of the campus, and just across Boulder Creek. To this field—to be known as Stratton Field—additions may be made by later purchase. This new playground has the advantage of being not far from the center of the campus; it is beautifully situated along the shady river bank, and will be large enough to give ample room for all the various College sports.

Athletics—especially inter-collegiate athletics—are placed on a stable financial foundation under the organization of the Associated Students of the University. A fee of $5.00, for the support of all student interests and activities, which the students imposed upon themselves by an almost unanimous vote, is now sanctioned by the Regents, and is collected from each student at the beginning of the year.

General supervision and direction of athletics is vested in the Athletic Board, composed of three members of the Faculty, appointed by the President of the University, and three student members, who are officials of the Associated Students. This Board is responsible in all things to the University Senate.

DEAN OF WOMEN

The Dean of Women devotes most of her time to the interests of the women students of the University. Miss S. Antoinette Bige-

low, formerly of Wellesley, was appointed Dean of Women in September, 1910.

WOMAN'S LEAGUE

The Woman's League, a voluntary association composed of the women students of the University, was established in 1895. It has a two-fold purpose: First, to promote the social and intellectual welfare of the women of the University; and, secondly, to establish a loan fund for the benefit of the women students. This fund is at present about one thousand dollars.

The Board of Control of the League consists of an Executive Committee, made up of the following officers: President, First and Second Vice-Presidents, Corresponding Secretary, Recording Secretary, Treasurer, and Chairman of the Entertainment Committee. These officers are elected in the last month of the school year. Each officer appoints a committee to help her, and these committees welcome the women students who are new-comers to the University, and extend to them a helping hand whenever needed. There is also an Advisory Board, chosen from the wives of members of the Faculty, who meet with the Board of Control every month, and assist them in planning the entertainments and other work of the League.

The Woman's Building furnishes headquarters for the women of the University. Here are the offices of the Dean of Women, the Woman's League, and the Young Women's Christian Association. There is a hall for meetings and entertainments.

ENTRANCE

Students on arrival at the University may obtain information concerning rooms and board at the Secretary's office in the Main Building. Usually the trains are met by representatives of the Christian Associations. The Y. W. C. A. and Woman's League rooms in the Woman's Building are open for the reception of women students during the opening days of the University.

The office is open for registration, beginning Friday morning preceding the opening day of the University. All students are requested to register as soon as possible after their arrival.

REQUIREMENTS FOR ADMISSION

Candidates for admission are expected to be graduates of a standard four-year high or preparatory school, or to have com-

pleted a corresponding amount of work under other conditions. Matriculants in the School of Medicine and in the School of Law must also present two years of college work. (See below.)

Students may be admitted on the passing of satisfactory examinations or on the presentation of certificates from an accredited high school.

Applications from graduates of a non-accredited school will be considered as the merits of each case may warrant; but full standing in such instances shall be conditional upon the subsequent work of the student concerned.

Candidates twenty-one years of age, who cannot satisfy the admission requirements, but are qualified to pursue special work, may be admitted to certain courses on the approval of the proper committee of the faculty.

Certificates of moral character may be required from all applicants for admission.

Fifteen units are required for admission. Entrance conditions will not be allowed beyond the equivalent of two units. A unit course of study is defined as a course covering a school year of not less than thirty-six weeks, with five periods of at least forty-five minutes each per week, two periods of Manual Training or Laboratory work being equivalent to one period of classroom work. This is equivalent to one hundred and eighty actual "periods" per unit. The fifteen units are equivalent to thirty "points."

Admission to the College of Liberal Arts, College of Commerce and College of Education.

The candidate for admission should present fifteen units as follows:

Mathematics	2
Languages other than English	4
English	3
History	2
Science	2
Electives	2
	15

Electives may be chosen from the following: Mathematics, 2; Greek, 2; Latin, 2; French, 2; German, 2; Spanish, 2; History, 2; English, 1; Science, 2; Psychology, ½. From the following group, subject to special accrediting by the University, not more than three units: Drawing, 1; Manual Arts, 2; Domestic Science, 1; Agriculture (Introductory Science), 1; Commercial Geography, ½; Elementary Economics, ½.

All students, who do not present the units specified in the above table of requirements for admission but who do present fifteen acceptable units, will be regularly admitted. Such students will, however, be required to elect in College courses that will fulfill the requirements specified, e. g., if a student enters with but two units of Language other than English, then he must include in his College course the equivalent of two units in foreign language. *This provision materially widens the scope of electives that will be accepted for College entrance.*

1. Half units will not be accepted in Physics and Chemistry.

2. Students who present three units of Greek are required to present only one unit of Science, but they must have a total of fifteen units.

3. For the foreign language requirement four units of Latin are preferred, at least two units urgently advised. Students intending to pursue the study of Latin in the University should present four units of Latin for entrance; those intending to pursue the study of Greek should present preferably three, at least two, units of Greek. It should be noted that matriculants in the School of Law must present two units of Latin; in the School of Medicine, one unit.

ADMISSION TO THE COLLEGE OF ENGINEERING.

Candidates for admission should present the following units:

Mathematics (Algebra, Plane and Solid Geometry)	3
Languages other than English, at least	2
English	3
History	2
Science (1 unit of Physics)	1
Electives	4
	15

Students presenting one unit in Chemistry for entrance may take qualitative analysis instead of elementary chemistry laboratory during their freshman year.

The electives are the same as for the College of Liberal Arts.

Admission to the School of Medicine.

In addition to a regular four-year high-school course or equivalent, two years of college work, estimated at sixty semester hours, are required for admission. At least one unit of Latin must be presented for entrance. See page 213.

Admission to the School of Pharmacy.

A four-year high-school course or equivalent is required for admission to all courses. At least one year of Latin is prescribed. See page 238.

Admission to the School of Law.

In addition to a regular four-year high-school course or equivalent, two years of college work, estimated at sixty semester hours, is required for admission. This preliminary entrance requirement must include four units of language other than English, of which two at least must be Latin. See page 245.

Description of Units in English.

The National Conference on Uniform Entrance Requirements in English voted that the following requirement for the years 1913, 1914, and 1915 should be recommended to the constituent bodies for adoption:

Preparation in English has two main objects: (1) command of correct and clear English, spoken and written; (2) ability to read with accuracy, intelligence, and appreciation.

English Grammar and Composition.

The first object requires instruction in grammar and composition. English grammar should ordinarily be reviewed in the secondary school; and correct spelling and grammatical accuracy should be rigorously exacted in connection with all written work during the four years. The principles of English composition governing punctuation, the use of words, paragraphs, and the different kinds of

whole composition, including letter-writing, should be thoroughly mastered; and practice in composition, oral as well as written, should extend throughout the secondary school period. Written exercises may well comprise narration, description, and easy exposition and argument based upon simple outlines. It is advisable that subjects for this work be taken from the student's personal experience, general knowledge, and studies other than English, as well as from his reading in literature. Finally, special instruction in language and composition should be accompanied by concerted effort of teachers in all branches to cultivate in the student the habit of using good English in his recitations and various exercises, whether oral or written.

Literature.

The second object is sought by means of two lists of books, headed respectively *reading* and *study*, from which may be framed a progressive course in literature covering four years. In connection with both lists, the student should be trained in reading aloud and be encouraged to commit to memory some of the more notable passages both in verse and in prose. As an aid to literary appreciation, he is further advised to acquaint himself with the most important facts in the lives of authors whose works he reads and with their place in literary history.

a. Reading—The aim of this course is to foster in the student the habit of intelligent reading and to develop a taste for good literature, by giving him a first-hand knowledge of some of its best specimens. He should read the books carefully, but his attention should not be so fixed upon details that he fails to appreciate the main purpose and charm of what he reads.

With a view to large freedom of choice, the books provided for reading are arranged in the following groups, from which at least ten units* are to be selected, two from each group.

I. The Old Testament, comprising at least the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings, and Daniel, together with the books of Ruth and Esther; the Odyssey, with the omission, if desired, of Books I, II, III, IV, V, XV, XVI, XVII; the Iliad, with the omission, if desired, of Books XI, XIII, XIV, XV, XVII, XXI; Vergil's Æneid. The Odyssey, Iliad and

* Each Unit is set off by semicolons.

Æneid should be read in English translations of recognized literary excellence.

For any unit of this group a unit from any other group may be substituted.

II. Shakespeare's Merchant of Venice; Midsummer Night's Dream; As You Like It; Twelfth Night; Henry the Fifth; Julius Cæsar.

III. Defoe's Robinson Crusoe, Part I; Goldsmith's Vicar of Wakefield; either Scott's Ivanhoe or Scott's Quentin Durward; Hawthorne's House of the Seven Gables; either Dickens' David Copperfield, or Dickens' Tale of Two Cities; Thackeray's Henry Esmond; Mrs Gaskell's Cranford; George Eliot's Silas Marner; Stevenson's Treasure Island.

IV. Bunyan's Pilgrim's Progress, Part I; The Sir Roger De Coverley Papers in the Spectator; Franklin, Autobiography (condensed); Irving's Sketch Book; Macaulay's Essays on Lord Clive and Warren Hastings; Thackeray's English Humorists; Selections from Lincoln, including at least the two Inaugurals, the Speeches in Independence Hall and at Gettysburg, the Last Public Address, and Letter to Horace Greeley, along with a brief memoir or estimate; Parkman's Oregon Trail; either Thoreau's Walden or Huxley's Autobiography and selections from Lay Sermons, including the addresses on Improving Natural Knowledge, A Liberal Education, and a Piece of Chalk; Stevenson's Inland Voyage and Travels With a Donkey.

V. Palgrave's Golden Treasury (First Series), Books II and III, with especial attention to Dryden, Collins, Gray, Cowper, and Burns; Gray's Elegy in a Country Churchyard, and Goldsmith's Deserted Village; Coleridge's Ancient Mariner, and Lowell's Vision of Sir Launfal; Scott's Lady of the Lake; Byron's Childe Harold, Canto IV, and Prisoner of Chillon; Palgrave's Golden Treasury (First Series), Book IV, with especial attention to Wordsworth, Keats, and Shelley; Poe's Raven, Longfellow's Courtship of Miles Standish, and Whittier's Snow-Bound; Macaulay's Lays of Ancient Rome, and Arnold's Sohrab and Rustum; Tennyson's Gareth and Lynette, Lancelot and Elaine, and The Passing of Arthur; Browning's Cavalier Tunes, The Lost Leader, How They Brought the Good News From Ghent to Aix, Home Thoughts From Abroad, Home Thoughts From the Sea, Inci-

dent of the French Camp, Hervé Riel, Pheidippides, My Last Duchess, Up At a Villa—Down in the City.

b. Study—This part of the requirement is intended as a natural and logical continuation of the student's earlier reading, with greater stress laid upon form and style, the exact meaning of words and phrases, and the understanding of allusions. For this close reading are provided a play, a group of poems, an oration, and an essay, as follows:

Shakespeare's Macbeth; Milton's L'Allegro, Il Penseroso, and Comus; either Burke's Speech on Conciliation With America, or both Washington's Farewell Address, and Webster's First Bunker Hill Oration; either Macaulay's Life of Johnson, or Carlyle's Essay on Burns.

MATRICULATION SCHOLARSHIPS

The pupil in each graduating class of an accredited high school of Colorado, who has maintained the highest record in studies is entitled to a scholarship in the University of Colorado, consisting of remission of the annual tuition, for four years in the Colleges of Liberal Arts, Commerce, Education or Engineering.

SPECIAL STUDENTS AND ADVANCED STANDING

Special students who wish to become candidates for a degree must fulfill all requirements for admission and complete the prescribed courses in the regular manner. See pages 45, 70.

Students coming from institutions of like grade should bring certificates definitely stating the amount of work done in each subject. Real equivalents will be accepted.

SCHOOLS SEEKING TO BE ACCREDITED BY THE UNIVERSITY OF COLORADO

The aim of the High-School Committee of the University is that the list of Accredited High-Schools shall be in a sense a roll of honor, a list of schools whose standing is in no way doubtful. In pursuance of this ideal a school that is not clearly strong in the support of its community, in organization, in teaching force, in standards of scholarship, in equipment and in school tone and spirit cannot be placed or retained on the list. Wherever there is a reasonable doubt in respect to any of these particulars, the committee

will feel justified in dropping any school from the list or in leaving it in the waiting class. The list will be revised each year in February. It is hoped that the following statements will help to a clearer understanding of the governing principles of the High-School Committee, and may indicate some specific aims for the guidance of school officers:

1. There should be in any community, supporting a High School, something of enthusiasm for the school, some pride in it, and a well-marked willingness, coupled with the ability to spend money and to spend it intelligently. The attitude toward the teacher should be one of consideration and co-operation.

2. The location and construction of the buildings; the lighting, heating and ventilation; the nature and care of the lavatories, the corridors, closets, water supplies, school furniture, apparatus must be such as to insure hygienic conditions for both pupils and teachers.

3. The library, the laboratory and all other equipment must be adequate to the needs of instruction. They should be much more than barely adequate.

4. The teaching staff should consist of at least three teachers of academic preparation equivalent to that usually represented by the B.A. degree. They should have had some professional training and should have more than average enthusiasm for their work.

5. It is strongly advised that no teacher be required to teach more than five periods per day. No school will be considered which requires more than six periods of any teacher.

6. No school will be considered whose records show an abnormal number of pupils per teacher.

7. It is expected that there will be an earnest spirit of co-operation between teachers and teachers, and between teachers and pupils, and that the intellectual and moral tone of the school will be high.

8. A school asking to be accredited should have been completely organized on the above basis long enough to have graduated classes for two years, and should have a creditable class for graduation in the year in which it makes its application. A school some of whose graduates have gone on to higher institutions is more acceptable than one of which this is not true.

9. The high school should have a sound and well-balanced course of study, and graduation from the school should be based upon not less than fifteen units.

*ACCREDITED SCHOOLS

Alamosa High School.
Arvada High School.
Aspen High School.
Bent County High School (Las Animas).
Berthoud High School.
Brighton High School.
Brush High School.
Canon City High School.
Central City High School.
Cheyenne County High School (Cheyenne Wells).
Cheyenne (Wyo.) High School.
Colorado City High School.
Colorado Springs High School.
Cripple Creek High School.
Delta High School.
Denver High School, East Side.
Denver High School, Manual Training.
Denver High School, North Side.
Denver High School, South Side.
Denver High School, West Side.
Douglas County High School (Castle Rock).
Durango High School.
Eaton High School.
Florence High School.
Fort Collins High School.
Fort Morgan High School.
Fruita High School.
Garfield County High School (Glenwood Springs).
Georgetown High School.
Golden High School.
Grand Junction High School.
Greeley High School.
Gunnison County High School (Gunnison).

* Arranged in alphabetical order.

Holly High School.
Huerfano County High School (Walsenburg).
Idaho Springs High School.
Lafayette High School.
Lamar High School.
Leadville High School.
Littleton High School.
Logan County High School (Sterling).
Longmont High School.
Loveland High School.
Manitou High School.
Monte Vista High School.
Montrose County High School (Montrose).
Otero County High School (La Junta).
Ouray County High School (Ouray).
Palisade High School.
Paonia High School.
Pueblo High School, District No. 1.
Pueblo High School, District No. 20.
Rocky Ford High School.
Saguache County High School (Saguache).
Salida High School.
Sedgwick County High School (Julesburg).
South Canon City High School.
State Preparatory School, Boulder.
Telluride High School.
Trinidad Public High School.
Victor High School.
Wheat Ridge High School (Edgewater).
Windsor High School.
Miss Wolcott's School, Denver.
Wolfe Hall, Denver.

DORMITORIES

Students living on the campus are subject to the following rates: Unfurnished rooms, including heat and light, men's dormitory, $3.00 per month for each student (care of room included); the woman's building and the woman's cottage, $3.00 per month for each student. Room rent must be paid in advance for each semester.

Rooms will be assigned to the three upper classes of the University at the end of the year in the order of seniority. The remaining rooms will be assigned at the beginning of the fall semester. Students who have engaged rooms must occupy them as early as the first day of the semester, or present satisfactory excuse for absence to the Secretary; otherwise they will be considered as not engaged. Occupants of rooms will be held responsible for damage. Before taking possession of rooms in the men's dormitory, each student will deposit with the Secretary of the Board of Regents $5.00. The money will be returned upon vacating the room, less such portion thereof as may have been set aside for repairing damages. Facilities for obtaining furniture and supplies are abundant in Boulder, and the rates are reasonable.

Each of the women's dormitories is under the supervision of a matron. The men's dormitory is governed by a House Committee, elected by the students residing there; this committee acts in conjunction with a committee of the Faculty.

EXPENSES

Students not living on the campus may obtain room and board in private families at $4.50 per week and upward. These rates may be greatly reduced by the formation of students' boarding clubs. Recently a statement of expenses at the University was asked from the students. The items included room, board, laundry, books, and all other expenses except fees, tuition in the professional schools, railroad fare and clothing. Out of the whole number making returns ten per cent. reported an annual expenditure of less than $125; thirty-one per cent. of less than $200; eighty per cent. of less than $350, and ninety-seven per cent. of less than $500.

SPECIAL RAILROAD RATES

The Colorado & Southern Railway and The Denver and Interurban Railway sell students' commutation tickets at the following rates:

8-RIDE TICKETS—30-DAY STUDENTS' COMMUTATION.

From Boulder, Colo., to	Rate.
Berthoud, Colo	$3.25
Denver, Colo	4.00
Lafayette, Colo	3.00
Longmont, Colo	2.80
Louisville, Colo	2.50
Loveland, Colo	4.50

The limit of these tickets is 30 days from date of sale, and they are not extended on any account, nor is any unused portion of them redeemed.

These tickets will be sold only on presentation of students' identification card (permit form 4), properly signed by the Secretary of the State University, to the person named thereon, and will only be good when presented with such permit and only for the transportation of the student named thereon.

Other commutation rates are also made for daily trips between above-named stations.

TUITION AND FEES*

COLLEGES OF LIBERAL ARTS, COMMERCE, AND EDUCATION.

Matriculation (paid once)	$ 5.00
Tuition, resident, per year	15.00
Tuition, non-resident, per year	25.00
Laboratory fees per semester, collected only from students who take the particular courses. [The following fees include breakage deposits, etc., as well as charges for material, hence are in part returnable, if the student exercises care.]	
Physics, all laboratory courses, 50 per cent. returnable	2.00
Chemistry [Lecture hours are not counted]:	
General Inorganic, per credit hour, 25 per cent. returnable	3.00
Qualitative Analysis, per credit hour, 25 per cent. returnable	3.00
Organic Preparations, per credit hour, 25 per cent. returnable	3.00
All other courses, per credit hour, 25 per cent. returnable	1.50
Biology:	
Botany, any course, 25 per cent. returnable	2.00
Zoology, any course, 25 per cent. returnable	3.00
Histology and Embryology, 25 per cent. returnable	2.50

* Special breakage charges may be collected whenever necessary in any laboratory department of the University.

Education:

Pedagogical library fee for each pedagogical course requiring duplicate books ..... $ 1.00

Teacher's registration fee 1.00

Geology:

General Geology, 60 per cent. returnable 5.00

Determinative Mineralogy, 25 per cent. returnable.. 4.00

Advanced Mineralogy, 25 per cent. returnable.... 2.00

Quantitative Mineralogy, 25 per cent. returnable ... 6.00

GRADUATE SCHOOL.

Matriculation (required of graduates from other colleges, paid once) 10.00

Diploma fee 10.00

COLLEGE OF ENGINEERING.

Matriculation (paid once) 5.00

Tuition and fees, resident, per year 25.00

Tuition and fees, non-resident, per year 35.00

SCHOOL OF MEDICINE.

Tuition, per year 75.00

SCHOOL OF PHARMACY.

Tuition, per year 75.00

SCHOOL OF LAW.

Tuition, per year 50.00

ASSOCIATED STUDENTS.

Annual fee for all students in all the Colleges and Schools, except the Denver Division of the School of Medicine, $2.50. [Recommended by the "Associated Students"; devoted entirely to student interests; entitles each student to free admission to all local events held under the auspices of the Associated Students, to copy of college weekly, etc. See "Associated Students," page 41]..... 5.00

COLLEGE OF LIBERAL ARTS

FACULTY

JAMES H. BAKER, M.A., LL.D., President.

FRED B. R. HELLEMS, Ph.D., Dean,
Professor of Latin.

J. RAYMOND BRACKETT, Ph.D.,
Dean of the Graduate School; Professor of Comparative and English Literature.

IRA M. DELONG, M.A.,
Professor of Mathematics.

CHARLES C. AYER, Ph.D.,
Professor of Romance Languages.

GEORGE NORLIN, Ph.D.,
Professor of Greek.

FRANCIS RAMALEY, Ph.D.,
Professor of Biology.

MELANCHTHON F. LIBBY, Ph.D.,
Professor of Philosophy.

JOHN BURTON PHILLIPS, Ph.D.,
Secretary of the College of Commerce; Professor of Economics and Sociology.

JOHN BERNARD EKELEY, Ph.D., Sc.D.,
Professor of Chemistry.

RUSSELL D. GEORGE, M.A.,
Professor of Geology.

THEODORE D. A. COCKERELL,
Professor of Systematic Zoology.

GEORGE M. CHADWICK,
Professor of Music.

JAMES F. WILLARD, Ph.D.,
Professor of History.

OLIVER C. LESTER, Ph.D.,
Professor of Physics.

FRANK E. THOMPSON, B.A.,
Secretary of the College of Education; Professor of Education.

JUNIUS HENDERSON, B.A.,
Professor of Natural History and Curator of Museum.

JOHN S. MCLUCAS, M.A.,
Professor of English.

GRACE FLEMING VAN SWERINGEN, Ph.D.,
Professor of German.

MILO G. DERHAM, Ph.D.,
Professor of Latin.

LAWRENCE W. COLE, Ph.D.,
Professor of Psychology and Education.

RALPH D. CRAWFORD, M.A.,
Assistant Professor of Geology.

S. ANTOINETTE BIGELOW, M.A.,
Dean of Women; Assistant Professor of Literature.

CHARLES H. WILLIAMS B.A., B.S. in Ed.,
Assistant Professor of Education.

FORDYCE P. CLEAVES, M.A.,
Instructor in Oratory.

MARGARET S. CARHART, M.A.,
Instructor in English.

HARRY A. CURTIS, B.S. (Ch.E.), M.A.,
Instructor in Chemistry.

ADOLPH G. PIERROT, Ph.B.,
Instructor in English.

WILLIAM R. BRACKETT, B.A.,
Instructor in Physics.

MILDRED S. MACARTHUR, M.A.,
Instructor in German.

Easley S. Jones, M.A.,
Instructor in English.

Elva Cooper, M.A.,
Instructor in Mathematics.

Arnold J. Lien, M.A.,
Instructor in Economics.

William V. Casey,
Instructor in Education.

Gerard L. C. M. van Rossen Hoogendijk, Ph.D.,
Instructor in Chemistry.

S. Griswold Morley, Ph.D.,
Instructor in Romance Languages.

Charles F. Poe, M.A.,
Instructor in Chemistry.

Paul M. Dean, M.A.,
Instructor in Chemistry.

Ethel R. Ford, B.A.,
Instructor in English.

Max M. Ellis, Ph.D.,
Instructor in Biology.

Arthur G. Vestal, B.A.,
Instructor in Biology.

Carl C. Eckhardt, Ph.D.,
Instructor in History.

Harold E. Robbins, M. A.,
Instructor in Physics.

Samuel S. Kingsbury, Ph.D.,
Instructor in Education.

J. Warren Stehman, M.A.,
Instructor in Economics.

William MacLeod Raine, B.A.,
Instructor in Journalism.

Donald McFayden, M.A., S.T.B.,
Instructor in Biblical History and Literature.

William E. Dittman, C.P.A.,
Instructor in Modern Accounting.

M. Adelaide Moys, B.A.,
Assistant in Latin.

Cleophile Bell, M.A.,
Assistant in Literature.

Georgia L. Field, M.A.,
Assistant in Literature.

Carl E. Salomon, M.A.,
Assistant in Literature.

Claribel Kendall,
Assistant in Mathematics.

Ida M. Johnson, B.A.,
Assistant in Romance Languages.

Mary Morse,
Assistant in Romance Languages.

Lorena Underhill, Ph.B.,
Assistant in Philosophy.

Walter S. Lovelace, B.A.,
Assistant in Economics.

Winthrop W. Leach,
Assistant in Chemistry.

Robert J. Groom,
Assistant in Chemistry.

Philip G. Worcester, M.A.,
Assistant in Geology.

Harry A. Aurand,
Assistant in Geology.

Eloie C. Dyer, B.A.,
Assistant in History.

Raymond J. Venables, B.A.,
Assistant in History.

Cornelius J. Marvin,
Assistant in Physics.

Hugh C. Pryor, B.A.,
Assistant in Education.

Jessie Rodgers, B.A.,
Assistant in Education.

Nellie M. Epperson, B.A.,
Assistant in Education.

Florence May Morse, B.A.,
Assistant in Education.

Victoria H. Hazlitt, B.A.,
Assistant in Education.

Fannie J. Boswell, M.A.,
Assistant in English.

S. Elizabeth Loyd,
Assistant in English.

Ruth M. Shelledy, B.A.,
Assistant in German.

Caroline L. Habermann, B.A.,
Assistant in German.

Maurine Tilley, B.A.,
Assistant in German.

J. Clarence DeVoss, B.A.,
Assistant in Psychology.

Edna M. Reynolds,
Assistant in Psychology.

EQUIPMENT

LABORATORIES

The Physical Laboratory—The Department of Physics occupies the entire first floor, two hundred feet by sixty feet, of the Hale Science Building, with a large modern lecture room on the second floor. The laboratories are large and well supplied with gas, water, direct and alternating current, and the ordinary apparatus for students' use. There are rooms for advanced and research work equipped with special apparatus particularly in light and electricity. A well equipped shop and a department library also add greatly to the efficiency of the department.

Chemical Laboratory—The basement of the Chemistry Building contains a laboratory for organic and physiological chemistry, a laboratory for food analysis, a laboratory for sanitary water analysis, and the main stock and acid room. On the first floor are the laboratories for general chemistry and for qualitative analysis, a private laboratory, a laboratory for quantitative analysis, a balance room, a combustion room, and the stock distributing room. The second floor contains the main lecture room with an amphitheatre seating two hundred and fifty people, the lecture desk is supplied with water, gas, suction pumps, draught, and electric current; on this floor also are a room for the storage of lecture apparatus, a smaller lecture room seating eighty students, the chemical library, the professor's study and private laboratory, a laboratory for technical and gas analysis, and a laboratory for physical and electrochemistry. Each desk in the various laboratories is equipped with gas, water, and sink, and, in the organic laboratory, with suction pumps. The ventilation is accomplished by the direct-indirect system, assisted by the hoods and a three horse-power electric motor and rotary fan. The laboratories for physical and advanced analytical chemistry are fitted up with the proper apparatus for thorough experimental work in these subjects. The chemical

library, to which students in the laboratories have access at any time, is considered one of the best in the West.

Biological Laboratory—The Biological Laboratory occupies the third floor of the Hale Science Building. There are a large general laboratory, a special laboratory for advanced work, a stock room, a preparation room, herbarium, a lecture room, and two private rooms for the professors. The laboratory is provided with microscopes, microtomes, water baths, glassware, reagents, etc. A series of embryological models of the latest pattern and a limited number of models for teaching histology are provided. There is some apparatus for work in plant physiology, as auxanometer, centrifugal, klinostat, etc. Instruments for field work in plant and animal ecology are provided. There are two thermographs, a psychrograph, and sets of thermometers, geotomes, photometers, etc. An electric arc lantern is used for projections. The collection of lantern slides is a large one and especially adapted for teaching the botany and zoology of the Rocky Mountain region.

The University maintains at Tolland, Colorado (altitude 8,889 feet), a mountain laboratory for summer work in plant and animal ecology and taxonomy. Students expecting to teach botany and zoology in high schools are here given practical experience in the study of living things in their natural surroundings. The laboratory is well equipped for research work.

Geological and Mineralogical Laboratories—The west wing of the new fire-proof science building now houses the departments of Geology and Mineralogy.

The lower floor contains an assay laboratory, a furnace room with two three-muffle coal furnaces and a gas furnace, a balance and a stock room, a room for storing and trimming rough material, a private office and laboratory, a paleontological laboratory and a lecture and recitation room.

On the second floor are the library and reading room, a drafting room, offices and private laboratories, an apparatus room and a large lecture room fitted with oak cases for the working collections, lantern, geologic maps, structural models, etc.

The top floor is designed for mineralogy and petrology and contains a petrology lecture and microscope room, an instrument room, a specimen room, private office and laboratories, a stock room, spectroscope room, quantitative mineralogy laboratory, balance room

and a determinative mineralogy laboratory. The determinative mineralogy laboratory provides desk room, complete blowpipe equipment and determinative apparatus for twenty-six students.

Research Laboratories—Three private laboratories, each designed to accommodate two or three students, and a research laboratory are now available for advanced students of the department.

By the addition of large oak cases which hold 15,560 specimens the Geology Department will now increase its working collections of minerals and rock specimens by approximately thirty-three per cent.

Four petrographical microscopes of the most approved type are available for optical mineralogy and petrography. A reflection goniometer and a machine for cutting sections of rocks and minerals have been added to the laboratory equipment of the Department. Equipment for advanced field work and geologic mapping includes traverse plane tables, Brunton pocket transits, aneroid barometers, Locke and Abney levels, steel tapes, a Stewart telemeter, drawing tables, pantagraph and planimeter. The library of the Department contains 2,500 volumes. It receives all United States and State Geological Survey reports and several important journals and magazines, as well as recent text and reference books on geology.

The Psychological Laboratory—The Psychological Laboratory occupies two rooms on the third floor of the Main Building. It is well equipped for instruction and training in physiological and experimental psychology. The equipment includes the apparatus necessary for general training courses in psychology and psychological methods, chronographs and recording appliances of various kinds, microscopic and lantern slides of brain sections, models, charts, a complete set of anthropometric instruments, etc. Instruments are provided for typical experiments in psychophysics, sensation, perception, association, reaction, and movement. Constant additions are being made to the equipment.

MUSEUM AND CABINETS

The Zoological Collections include vertebrate skeletons and skulls, mounted mammals and study skins, mounted birds and study skins, eggs and nests, fishes, reptiles, amphibians, crustaceans, insects and mollusks. Especially important is the large collection of land, fresh-water and marine shells, particularly rich in Colorado

and Pacific Coast material, and fresh-water fishes from various parts of the world.

The Botanical Collection consists of a large series of mounted specimens, including seed plants, lichens, fungi and algæ, a display case of tropical seeds and fruits, a representative series of tropical woods and a collection of economic woods of the United States.

The Guggenheim Biological Collection, purchased with funds placed at the disposal of the Board of Regents by Honorable Simon Guggenheim, United States Senator from Colorado, consists of a fine series of the nests and eggs of birds taken by Mr. Denis Gale at various altitudes in Colorado, with the accompanying field notes; also of a valuable collection of mounted birds and mammals, chiefly from Colorado and adjacent states.

The Mineralogical and Geological Collection consists of a large series of typical rocks, minerals, Colorado ores, microscopic sections of rocks, ores and minerals, wooden models of crystals, etc. They include both display and study specimens.

The Guggenheim Mineral Collection, the gift of Honorable Simon Guggenheim, consists of over 1,000 carefully selected type mineral specimens, which will be kept together for reference. It includes a large number of rare minerals not common in university cabinets, and is an extremely valuable addition to the equipment of the Department of Geology.

Ethnological Collections—By co-operation with the School of American Ethnology the University has secured some specimens to illustrate the ancient cultures of the Southwest. This collection is being added to each year. At present there are four cases of display material.

The Photograph and Lantern Slide Cabinets of the Biology and Geology departments and Museum contain several thousand negatives, prints and lantern slides illustrating various biological and geological phenomena.

The Paleontological Collections contain great quantities of Colorado marine invertebrates, very large numbers of Tertiary insects and plants from the Lake Beds of Florissant, Colorado, Cretaceous plants from various parts of the state and from Kansas, Paleozoic plants from the coal measures of the eastern states, sev-

eral thousand Tertiary and Pleistocene marine invertebrates from the Atlantic and Pacific coasts, a representative collection of Paleozoic invertebrates from the eastern states and Mississippi Valley, many invertebrate fossils from Europe and Mexico, and a few important fossil vertebrates, mostly from Colorado.

The Museum is temporarily located in the Hale Science Building, and contains the paleontological, biological and ethnological cabinets and part of the geological collections. A large portion of the material hereinbefore described is considered a part of the Museum, though some of the most valuable study collections belong to the Biology and Geology departments, and all of the material in the Museum is intended for the use of the various teaching departments, of the general public and of specialists working upon lines represented in the collections. About forty display cases contain suitable material on exhibition, the balance being in drawer cabinets, where it may be examined by students and others interested. Large quantities of duplicates are being collected for class use, research and exchange purposes. The Museum is at present the depository of the collections of the Colorado Geological Survey. Several loan collections are also in the cabinets.

For a number of years the nominal curator of the Museum, with members of the faculty and volunteer assistants, has been making short trips to various parts of the state for the purpose of collecting specimens and studying the natural phenomena of Colorado, and the material and notes thus obtained have formed the basis, wholly or in part, of many publications upon natural history subjects, which have appeared in *The University of Colorado Studies* and other periodicals. Early in 1909 arrangements were made for the Curator to devote his whole time to building up the Museum.

Among the more notable additions to the collections during 1911 were the following: A large amount of zoological, botanical and ethnological material from Arizona, collected by the Curator, assisted by Messrs. Wilfred W. Robbins and John P. Harrington, in co-operation with the School of American Archæology and the United States Bureau of Ethnology; many small but important collections of fossils and recent shells obtained by the Curator, members of the biology faculty and various volunteer assistants in Colorado; a very fine and interesting collection of fishes from British Guiana, collected by Dr. Max M. Ellis, of the Department

of Biology, and presented to the Museum through the liberality of Mr. Jake Gimbel, who financed the expedition; several important collections of fossils and recent mollusks from various parts of the world obtained by exchange; besides smaller but much appreciated donations by friends of the institution, among whom may be mentioned: John J. Blanchard, Ellsworth Bethel, N. DeWitt Betts, Witt Bowden, Roland Burnham (loan), Prof. Calvin S. Brown, Prof. Theodore D. A. Cockerell, J. A. M. Collins, Albert Dakan, J. Clarence DeVoss, Terry Duce, Ethel R. Ford, John P. Harrington, Norman E. Hinds, David M. Hunter, Eva Miller, Dr. E. S. Morley, Earl H. Morris, T. Harmon Parkhurst, Dr. H. A. Pilsbury, Frank Rohwer, Benjamin Rowland, George A. Smith, Harry E. Sovereign, D. W. Spangler, S. A. Walker, Don Walker, Prof. James F. Willard, and J. J. Wilson.

ART COLLECTIONS

The Phillips Art Collection is named from the donors, Mr. and Mrs. Ivers Phillips, of Boulder. It is contained in two rooms on the second floor of the Main Building and one on the third floor. Room 23 is devoted to the Dutch, German, French and English schools of painting; room 24 to Italian and Spanish painting; room 31 to architecture and sculpture. The masters of painting are represented by Braun autotypes, framed in oak under glass; some are of the largest size ever produced, and all are inalterable in carbon. The works in architecture and sculpture are represented by large photographic reproductions, casts and several hundred glass transparencies. The finest casts are Henning's restoration of the entire Parthenon frieze with that sculptor's designs for the missing slabs; the Portland vase in color; the vase of Sosibius; heads from Trajan's column; bas-reliefs by Donatello, Michelangelo, Flaxman and Wyon; Madonnas by Lucca della Robbia and Michelangelo; heads of Sappho, Juno, Jupiter, Minerva, Eros, Niobe, and the Hermes of Praxiteles; full size statues of Narcissus, Hermes, Apollo Belvidere, Diana of Versailles, Venus de Medici, etc.

Persons willing to contribute to a museum or library of fine arts are requested to confer with the curator, Professor J. Raymond Brackett.

Lectures covering the main subjects illustrated in the collection will be given in the Department of Comparative and English Literature; see also courses in Greek and Roman Archæology. In

1910 Prof. Lewis Frederick Pilcher of Vassar College gave a course of five lectures on problems in Greek sculpture and a course of seven lectures on the psychology of Art.

The Farnsworth Collection of Coins was given to the University by Dr. Wilson A. Farnsworth, of Cæsarea, Cappadocia. It consists of some three hundred and fifty Greek, Roman, Byzantine, Mediæval, and modern coins. The Greek coins illustrate autonomous, regal and imperial series, and are of silver and bronze; among them are rare coins from Egypt, Syria, Asia Minor, Macedonia and Greece. The Roman coins illustrate family and imperial series of silver and bronze. The collection is on exhibition in the rooms of the Greek department.

Greek Photographs—The department of Greek has added to its equipment a collection, almost complete, of photographs of sculptures in the Museum at Athens, as well as excellent photographs of representative statuary in the principal museums of Europe. The department has also a collection of more than two hundred photographs illustrating the scenery of Greece. From most of these, lantern slides have been made.

ARCHAEOLOGICAL INVESTIGATIONS

The University of Colorado is undertaking, in collaboration with the School of American Archæology, a series of studies in the ancient culture history of the state. A field expedition was conducted in the McElmo district in Montezuma County in the summer of 1908, a report of which has been published. A group of ruins was excavated and a representative portion of the material collected has been placed in the University Museum. Students and members of the University faculty have been afforded opportunity for field work in ethnology and archæology in several of the southwestern states, which has resulted in further additions to the collections. The University is also assisting in the compilation of a record of all the archæological sites in the state. A course of thirty lectures on American Archæology and Ethnology has been given at the University in 1909-1910, 1910-1911, and 1911-1912, by Dr. Edgar L. Hewitt, Director of the School of American Archæology, and Mr. John P. Harrington, Ethnologist, of the same institution.

COURSES OF STUDY

INTRODUCTORY

In connection with the new requirements for graduation the following general tendencies may be noted. An attempt has been made to map out, instead of the old elective plan, an intelligent and reasonable group system, which shall leave adequate freedom for individual needs and abilities, and, at the same time, prevent undesirable scattering of the student's energies. Provision is made for a combination of certain fundamental subjects and free electives with special work that shall be more scholarly and more finally valuable both for cultural attainments and scientific efficiency. In accordance with the latter idea students are required to take a large part of their group electives in their junior and senior years when it is possible to do real University work leading to the attainment of considerable knowledge and real power in some special line.

Moreover, the plan adapts itself readily to the needs of students who are looking forward to further work in professional and technical schools. Thus, within the College of Liberal Arts itself provision is made for a College of Commerce with various subdivisions and for a College of Education. By combining work in the College of Liberal Arts with work in the technical schools the student may attain the degree of B.A. and either the degree of B.S. in the College of Engineering, or the degree of LL.B. in the School of Law, or the degree of M.D. in the School of Medicine, in six years. In summary, then, we have a group system so arranged that the first two years in the College of Liberal Arts provide alike a foundation for more advanced work along University lines and a sound preparation for courses in the technical and professional schools. This latter phase of the plan is in accordance with the growing conviction that the college course must do its part in the genuine preparation of students for a vocation, as well as offer every opportunity for the acquiring of a liberal education in the most enlightened sense of the word.

For the purposes of the present group system the various subjects are arranged as follows:

I. Division of Letters: 6 groups.

II. Division of Sciences: 7 groups.

III. Division of Philosophy: 3 groups.

IV. Division of History and Economics: 2 groups.

With the same general purpose in view, but elaborately carried out, the College of Commerce and the College of Education have been established.

V. Division of Commerce, organized as the College of Commerce: 4 groups as follows: 1. Banking; 2. Manufacturing; 3. Journalism; 4. Trade, Transportation, Consular Service.

VI. Division of Education, organized as the College of Education: a professional group, and groups corresponding to those of the College of Liberal Arts.

Here may also be noted the arrangement for obtaining two degrees in six years by crediting courses in the professional schools as a substitute for the groups and electives of the last two years—an extension of the group system. See pages 69, 115.

VII. Engineering Subjects: equivalent of two years.

VIII. Law Subjects: equivalent of one year.

IX. Medical Subjects: equivalent of two years.

REQUIREMENTS FOR ADMISSION

See page 45.

REQUIREMENTS FOR GRADUATION

To attain the degree of Bachelor of Arts students must complete one hundred and twenty hours according to the schedule printed below.

Attention is called to the following points:

1. Students must take fifty hours in some scheduled group, including at least five hours in each minor, the adjustment of the remaining hours to be advised by the major professor. Of the fifty hours, they shall take at least thirty in the junior and senior years.

2. They may be allowed to substitute four hours of elective courses for the required composition of the sophomore year, on recommendation of the head of the Department of English Lan-

guage, if they attain a satisfactory grade in English composition of the freshman year.

3. Students taking ten hours of either classics, mathematics, or science in the freshman year, shall choose five hours in one of the other groups named, in the sophomore year, unless they have included such five hours in their freshman year.

NOTE—The various branches taught in the College of Liberal Arts are offered in courses of study. A *five-hour course*, as here used, means *five* exercises a week throughout a semester; a course in which the class meets the instructor *once* a week is a *one-hour course*. Three *five-hour courses* successfully pursued for one semester would entitle the student to *fifteen* hours' credit; for one year, to *thirty* hours' credit; and so on.

Freshmen students regularly take fifteen or sixteen hours per week, other classmen fifteen to seventeen.

On a day appointd before the close of each semester all students are required to record their election of studies for the next semester. Credit will be granted for such studies only as have been approved by the Committee on Courses. No student will be permitted to change his course, or drop any study, except by vote of the Committee on Courses.

SCHEDULE

FRESHMAN YEAR

1.	ENGLISH LANGUAGE	6 hours
*2.	CLASSICS, MATHEMATICS OR SCIENCE	10 hours
3.	HISTORY OR ECONOMICS	6 hours
4.	FREE ELECTIVES (8 or 10 hours)	8 hours
		30 hours

SOPHOMORE YEAR

5.	ENGLISH LANGUAGE OR LITERATURE	4 hours
*6.	CLASSICS, MATHEMATICS OR SCIENCE	5 hours
7.	PSYCHOLOGY OR PHILOSOPHY	5 hours
8.	GROUP ELECTIVES (Major or Minor)	10 hours
9.	FREE ELECTIVES (6 or 8 hours)	6 hours
		30 hours

* To be in different groups, e. g., if ten hours of classics are elected in the freshman year, then five hours of mathematics or science must be elected in the sophomore year, unless already included in the freshman year.

JUNIOR YEAR

10. GROUP ELECTIVES (Major or Minor) .....20-15 hours
11. FREE ELECTIVES .....10-15 hours

30 hours

SENIOR YEAR

12. GROUP ELECTIVES (Major or Minor) .....20-15 hours
13. FREE ELECTIVES .....10-15 hours

30 hours

GROUPS

I. DIVISION OF LETTERS

GROUP (a) *Major*, Latin; *Minors*, { Greek, European History.

GROUP (b) *Major*, Greek; *Minors*, { Latin, English Literature.

GROUP (c) *Major*, German; *Minors*, { French, History.

GROUP (d) *Major*, { Romance Languages; *Minors*, { Latin, German.

GROUP (e) *Major*, { Comparative and English Literature; *Minors*, { History, English Language.

GROUP (f) *Major*, { English Language; *Minors*, { English Literature. English History.

II. DIVISION OF SCIENCES

GROUP (g) *Major*, Mathematics; *Minors*, { Physics, Astronomy.

GROUP (h) *Major*, Chemistry; *Minors*, { Physics, Mathematics,

GROUP (i) *Major*, Physics; *Minors*, { Mathematics, Chemistry.

GROUP (j) *Major*, Botany; *Minors*, { Zoology, Chemistry.

GROUP (k) *Major*, Zoology; *Minors*, { Botany, Chemistry.

GROUP (l) *Major*, Geology; *Minors*, { Chemistry, Mineralogy.

GROUP (m) *Major*, Mineralogy; *Minors*, { Geology, Chemistry.

III. DIVISION OF PHILOSOPHY

GROUP (n) *Major*, Philosophy; *Minors*, { Psychology, Biology.

GROUP (o) *Major*, Psychology; *Minors*, { Philosophy, Biology.

GROUP (p) *Major*, Education; *Minors*, { Psychology, Biology.

IV. DIVISION OF HISTORY AND ECONOMICS

GROUP (q) *Major*, History; *Minors*, { Economics and Sociology.

GROUP (r) *Major*, { Economics and Sociology; *Minor*, History.

ORDER OF DESCRIPTION OF COURSES

The various courses offered in the College of Liberal Arts are described in the following order:

Greek.
Latin.
Hebrew.
German Language and Literature.
Romance Languages—French, Spanish, Italian.
Comparative and English Literature.
English Language.
Oratory and Expressive Reading.
Library Science.
Mathematics.
Physics.
Chemistry.
Biology.
Geology and Mineralogy.
Philosophy, Logic and Ethics.
Psychology.
Education.
History.
Economics, Sociology.
Music.
Electives in the Professional Schools.

*DESCRIPTION OF COURSES

GREEK

†1-2. Elementary Course. *Throughout the year.* 11:00. 5 h. *each semester.*
Goodwin's Grammar and Xenophon's Anabasis.

†3. Homer's Odyssey. *First semester.* 9:00. 3 h.
Careful study of selected books.

†4. Lysias' Orations and Review of Greek Grammar. *First semester.* 9:00. 2 h. *For freshmen.*

5. History of Athens. *First semester.* 9:00. 3 h. *Open to all.*
Lectures with assigned readings on the constitutional, political and literary history of the Ancient City. No reading of Greek required.

6. Plato. *Second semester.* 9:00. 3 h. *For freshmen.*
The Apology and Crito with selections from the Phædo.

7. Tragedy. *Second semester.* 9:00. 2h. *For freshmen.*
Sophocles' Antigone or Euripides' Medea with introductory lectures on the Greek Drama.

8. Plato. *First semester.* 11:30. 3 h.
Rapid reading of selections.

9. Aristophanes. *First semester.* 11:30. 2 h.
Selected comedies.

10. Demosthenes. *First semester.* 10:00. 3 h.
Oration on the crown.

11. Pastoral Poetry. *First semester.* 10:00. 2 h.
Theocritus, Bion and Moschus.

---

* Courses for Graduates only are listed and described under Graduate School.

† Courses 1-2 are offered for students who come to the University without preparation in Greek. Upon the completion of these courses they are prepared to enter courses 3 and 4. Courses 3 and 4 are also for freshmen who enter the University with at least two units of Greek.

12. Plato. *Second semester.* 10:00. 3h.
Interpretation of the Republic with lectures on Platonism.

13. Thucydides. *Second semester.* 10:00. 2 h.
Selected books.

14. Lyric Poetry. *First semester.* 10.00. 3 h.
Early Lyric Poets, with introduction to Pindar and Bacchylides.

15. Tragedy. *First semester.* 10:00. 2 h.
Advanced course; Æschylus and Euripides.

16. Prose Composition. *Second semester.* 11:30. 2 h.

17. Aristotle's Poetics. *Second semester.* 2:30. 1 h.

18. History of Greek Literature. *First semester.* 3:30. 3 h.
Lectures with reading of best English translations of Greek authors.

19. History of Greek Literature. *Second semester.* 3:30. 2 h.
Continuation of 18.

20. History of Greek Art. *First semester.* 2:30. 2 h.

21. Classical Mythology. *Second semester.* 3:30. 2 h.
Lectures and readings; interpretation of myths.

For courses for graduates only, see page 143.

LATIN

1. Cicero. *First semester.* 11:30. 3 h.
Cicero, De Senectute, De Amicitia; the relation of these works to Cicero's other writings; Latin grammar, prose composition.

2. Ovid. *First semester.* 11:30. 2 h.
Selections from Ovid; the influence of Ovid on modern literature; introduction to classical mythology.

3. Livy. *Second semester.* 11:30. 3 h.
Selections from the earlier books; Latin prose composition.

4. Terence and Plautus. *Second semester.* 11:30. 2 h.
One play of each author; the place of Terence and Plautus in literature; introduction to Roman comedy.

5. Horace. *First semester.* 8:00. 3 h.
The Odes and Epodes; introduction to Latin lyrical poetry; Latin versification.

6. Latin Prose. *First semester.* 8:00. 2 h.

7. Tacitus. *Second semester.* 8:00. 2 h.
Tacitus, Agricola and Germania; the spread of Roman influence in the West.

8. Latin Prose and Sight Translation. *Second semester.* 8:00. 3 h.

9. Latin Literature. *Throughout the year.* 2:30. 3 h.
The outlines of the literature with its historical setting. The course is based on Latin selections.

10. Roman History. *First semester.* 10:00. 3 h.
Lectures and reports on sources.
Outlines of Roman History; the history of Rome from its foundation to 476 A. D.

11. Roman Satire. *First semester.* 8:00. 3 h.
Horace, Juvenal, Persius; the origin and development of satire with a critical estimate of the historical value of the contents.

12. Tacitus and Pliny. *First semester.* 8:00. 2 h.
Tacitus, Histories, book I; Pliny, Letters, book X; introduction to the prose of the Silver Latinity; Rome and the provinces.

13. Roman Comedy. *First semester.* 1:30. 3 h.
Terence and Plautus, six plays; a comparative study of these authors from the literary as well as the morphological side.

14. Rhetorical Treatises. 5 h.
Horace, Ars Poetica; Cicero, De Oratore, Brutus; Quintilian, book X; Tacitus, Dialogus de Oratoribus; principles of literary criticism; the debt of the above writers to Greek sources.

15. Catullus. *First semester.* 11:30. 2 h.
Latin lyrical poetry.

16. Roman Philosophy. 5 h.
Lucretius, De Rerum Natura; Cicero, De Natura Deorum, De Finibus and Tusculanæ; Seneca, selections; the place of Roman philosophy in the history of philosophy; the part played by these writers individually.

17. Roman History. 63 B. C. to 37 A. D. 3 h.
Sallust's Catiline; Cicero's Letters (Abbot's selections); Tacitus, Annals, books I—VI; Velleius Paterculus, book II.

18. Tibullus and Propertius. 2 h.
Selected odes; special studies in Latin lyrical poetry.

19. MARTIAL AND PLINY. 2 h.
Selected epigrams and letters; private life under the early Roman Empire.

20. LATIN LITERATURE IN ENGLISH. 3 h.
The course is based on standard translations and is intended for students not taking Latin.

21. LIVY. 2 h. *For advanced students.*
Book I as a basis for the consideration of the problems of early Roman history.

22. SUETONIUS. 2 h.
Selected lives; introduction to the history of the Empire.

23. TEACHERS' TRAINING COURSE. *Second semester.* 3 h. *For advanced students.*
Lectures, reviews of text-books; practical work in teaching under supervision.

24. ADVANCED LATIN PROSE. 2 h.
Stylistic analysis of Latin authors; the writing of Latin prose; problems in syntax.

25. GREEK AND ROMAN ARCHÆOLOGY. 2 h.
An elementary course in architecture, sculpture and painting.

For courses for graduates only, see page 144.

*HEBREW

1. BEGINNERS' COURSE. *First semester.* 1:30. 3 h. 1910.
Introductory lectures on Semitic life and literature; study of Genesis, Chapters, 1-8.
Harper's Method and Manual with Elements of Hebrew.

2. COURSE I CONTINUED. *Second semester.* 8:00. 3 h.

3. SECOND-YEAR COURSE. *First semester.* 1:30. 3 h. 1911.
Introductory lectures on Semitic religions; review of grammar and syntax; translations in Old Testament histories.
Kittells' Text; Tregelles, Gesenius or Brown-Driver-Briggs Lexicon.

4. COURSE 2 CONTINUED. *Second semester.* 1:30. 3 h.
Translations in Psalms, Wisdom Literature, Minor Prophets.

* It is the object of this Department to give the student, in a two-year course, a good working knowledge of the Hebrew language and literature. It is designed especially to meet the wants of theological students, students preparing for missionary work, and those desiring to add this as a linguistic accomplishment.

GERMAN LANGUAGE AND LITERATURE

*1-2. Elementary Course. *Throughout the year.* 8:00, 11:30, 1:30. 5 h.

Grammar, pronunciation, easy reading; practice in writing and speaking German.

*3-4. Intermediate Course. *Throughout the year.* 8:00 and 11:30. *M. W. F.* 3 h.

Reading of selected masterpieces of German literature, such as Lessing's Minna von Barnhelm, Schiller's Jungrau von Orleans, Ludwig's Zwischen Himmel und Erde, Freytag's Die Journalisten.

It is strongly recommended that course 3-4a accompany course 3-4.

Prerequisite: course 1-2, or two years of high-school German.

3-4a. German Composition. *Throughout the year.* 8:00, 11:00. *Tu. Th.*

Pope's German Composition, including German themes and letters; practice in speaking German.

It is recommended that course 3-4a be taken parallel with course 3-4.

Prerequisite: course 1-2, or two years of high-school German.

5. Lessing as a Dramatist. *First semester.* 3 h.

Study of Nathan der Weise and Emilia Galotti; readings from Lessing's other works; discussions and papers.

Prerequisite: courses 3-4 and 3-4a.

6. Schiller's Wallenstein and Die Braut von Messina. *Second semester.* 3h.

Readings from the other plays of Schiller, and from Schiller's Geschichte des Dreissigjährigen Kriegs; discussions and papers.

Prerequisite: course 5.

7. Goethe's Dramas, Exclusive of Faust. *One semester.* 3 h.

Readings, discussions, and papers.

Prerequisite: course 5 or 6.

8. The German Drama of the Nineteenth Century. *First semester.* 3 h. *Open to graduate students and seniors who read German with facility.*

* The aim of courses 1-4a is to prepare the student to read the German language with facility, and to understand German at hearing.

Reading of representative plays and discussion of the problems which they present.

9. The Phonetics and Pronunciation of German. *One semester.* 2 h.

Vietor's German Pronunciation, with additional exercises in reading German.

10. German Conversation. *One semester.* 2 h.
11. Goethe's Faust; Parts I and II. *Second semester.* 3 h. *Open to graduate students and seniors.*
12. Studies in the History of the German Novel. *One semester.* 3 h. *Open to seniors and juniors who read German with facility.*

Reading and discussion of selected works.

13. The German Novelle. *One semester.* 3 h. *Open to seniors and juniors who read German with facility.*

Reading and discussion of representative stories.

This course alternates with course 12.

14. German Lyrics. *One semester.* 1 h.

Prerequisite: course 3-4.

15. German Ballads. *One semester.* 1 h.

Prerequisite: course 3-4.

16. Teachers' Course. *Throughout the year.* 2 h.

The phonetics and pronunciation of German; methods of teaching German to foreigners; examination of grammars and readers; systematic study of one of the texts usually read in high schools.

For courses for graduates only, see page 145.

ROMANCE LANGUAGES

FRENCH

1. Beginners' Course. *First semester.* 10:00, 11:30, and 1:30. 5 h.

A course in grammar, pronunciation and sight reading for students who present German for admission to college.

Fraser and Squair's French Grammar; Aldrich and Foster's French Reader; Matzke's Primer of French Pronunciation.

2. Course 1 Continued. *Second semester.* 10:00, 11:30 and 1:30. 5 h.

Reading of modern French prose; phonetic drill; committing to memory of selected passages; prose composition.

3. Second-Year Course. *First semester.* 9:00. 5 h.
Modern French stories and plays to be selected from the works of Balzac, Daudet, Dumas, Feuillet, Pailleron, Maupaussant; selected lyrics; prose composition; daily themes.

4. Second-Year Course Continued. *Second semester.* 9:00. 5 h.
One play each of Corneille, Racine, Victor Hugo, Molière; prose writings of the Romantic School; completion and review of French Grammar; prose composition twice a week.

5. Third-Year Course. *First semester.* 10:00. 3 h.
Systematic reading of authors or by topics to be selected from the following and given in the third and fourth years: Molière, Victor Hugo, Modern Drama, Classic Tragedy, Romantic School, Lyric Poetry. 1911-1912, Classic Tragedy; Francois's Advanced Prose Composition.

6. Third-Year Course. *Second semester.* 10:00. 3 h.
1911-1912, Eighteenth Century Literature; Francois's Advanced Prose Composition.
See course 5.

7. History of French Literature. *First semester.* 10:00. 2 h.
Lectures and reports.
From the beginnings to the reign of Francis I.

8. History of French Literature. *Second semester.* 10:00. 2 h.
Lectures and reports.
From the reign of Francis I. to the present time.

For courses for graduates only, see page 146.

SPANISH

1. Beginners' Course. *First semester.* 11:30. 3 h.
Grammar, pronunciation and sight reading.
Hills' and Ford's Spanish Grammar; Hills' Spanish Tales for Beginners.

2. Course 1 Continued. *Second semester.* 11:30. 3 h.
Modern Spanish novels and plays; practical exercises in composition and conversation based on Butler's Spanish Teacher.

3. Second-Year Course. *First semester.* 9:00. 2 h.
Reading of standard authors; completion and review of Spanish grammar; El Capitan Veneno.

4. Second-Year Course. *Second semester.* 9:00. 2 h.
   Spanish drama, prose and poetry; prose composition; two plays of Echegaray, Valera's Pepita Jiménez.
5. Spanish Literature of the Nineteenth Century. *First semester.* 2 h.
6. Lope de Vega and Calderon. *Second semester.* 2 h.
7. Advanced Prose Composition. *Second semester.* 1 h.

For courses for graduates only, see page 146.

ITALIAN

1. Beginners' Course. *First semester.* 2:30. 3 h.
   Young's Italian Grammar; Marinoni's Italian Reader; grammar, pronunciation and sight reading.
2. Course 1 Continued. *Second semester.* 2:30. 3 h.
   Advanced composition; modern Italian novels and plays; De Amicis, La vita militare, three comedies of Goldoni.
3. Dante's Divine Comedy. *First semester.* 2 h.
4. Petrarch and Bocaccio. *Second semester.* 2 h.

For courses for graduates only, see page 146.

Notice—Students are recommended to take up the Romance Languages in the following order: French, Spanish, Italian. They should not elect courses simultaneously in Spanish and Italian without consulting the instructor.

COMPARATIVE AND ENGLISH LITERATURE

1. Introduction to Narrative and Lyric Poetry. *Throughout the year.* 1 h. *Open to freshmen.*
2. Introduction to the Novel. *Throughout the year.* 1 h. *Open to freshmen.*
3. The Analysis of Play Construction. *Throughout the year.* 1 h. *Open to freshmen who enter with high standing in English.*
4. Art Form. *Throughout the year.* 1 h. *Open to all.*
   Lectures illustrated by lantern slides.
   The sources, effects and methods of composition in poetry illustrated by reference to architecture, sculpture and painting; the chief art works of every age.

5. The History of English Literature. *Two or more divisions. Throughout the year.* 5 h. *Open to sophomores. Every year.*

Recitations and lectures.

From Anglo-Saxon times to the twentieth century; the chief types of prose and poetry; the principles of literary analysis and criticism; wide reading in English authors. This is the foundation course for those electing literature as a major. An effort is made to secure good habits of reading and writing.

Saintsbury's Short History of English Literature; Century Readings in English Literature.

6. Shakespeare. *Two divisions. Throughout the year.* 5 h. *Open to graduates and advanced undergraduates. Every year.*

All the works attributed to Shakespeare are read during the year; studies in the style, diction and versification of the different periods; the establishment of the text; interpretation of great dramatic types—history, comedy, tragedy; wide reading and some original research.

7. The Great Drama. *Throughout the year.* 5 h. *For graduates and advanced undergraduates.* 1912.

The international aspects of the English drama; a reading course from the mystery plays to the twentieth century.

8. Milton's Poetry. 2 h. *For advanced students.* 1905.

9. Wordsworth. *First semester. Tu. Th.* 2 h.

10. Shelley. *First semester.* 1 h.

11. Tennyson. *Throughout the year. Tu. Th. For advanced students.*

12. Browning. *Second semester.* 1 h. *For advanced students.* 1909.

The Globe edition of Tennyson; the Cambridge edition of Browning. The Seminary Library contains many volumes of valuable Tennysoniana presented by members of the class of 1896, and publications of the Browning Society.

Courses 11 and 12 require a preliminary training in literary method.

13. Victorian Prose. *Throughout the year.* 2 h. *Open to seniors and juniors.*

14. American Authors. *Throughout the year.* 2 h.

15. Comparative Literature; Early Literature and Art. *Throughout the year.* 11:00. 3 h. *Open to all.* 1910.

The lectures deal with the poetry of primitive peoples, of China, of Japan; with the special contributions to the evolution of literature made by Egypt, Babylonia, Judea, Arabia, India, Persia. The literature of each people is viewed in connection with other manifestations of the artistic impulse; the chief works in architecture, sculpture and painting.

16. The Epic. *Throughout the year.* 5 h. *For graduates and undergraduates.* 1911.

The Iliad, the Odyssey and the Æneid; the Divine Comedy; the great epics of all ages (in English).

17. World Drama. *Throughout the year.* 5 h. *For graduates and advanced undergraduates.* 1912.

The development of the drama from the earliest times to the present; primitive drama; the literary drama of China, Japan, and India; the ancient classical drama; Calderon; Corneille, Racine, Molière, Victor Hugo; Lessing, Schiller, Goethe; Ibsen; Tolstoy; Echegaray; Rostand, Maeterlinck; D'Annunzio; Hauptmann, Sudermann. This is a reading course, including one hundred and twenty-seven plays (in English).

18. The Short Story.

19. Masterpieces of Prose Fiction from the Earliest Times. *Throughout the year.* 5 h. *Open to graduates and advanced undergraduates.* 1912.

Typical masterpieces from the Greek romances to the present.

For courses for graduates only, see page 147.

ENGLISH LANGUAGE

1. Freshman English. *Nine sections. Throughout the year. M. W. F.* 8:00, 9:00, 10:00, 11:30, 1:30. 3 h. *Required of all college freshmen.*

Text-book, daily themes, oral exercises.

2. Sophomore English. *Throughout the year. Tu. Th.* 9:00. 2 h.

A continuation of course 1.

3. Advanced Composition. *Two sections. First semester. Tu. Th.* 10:00. 2 h.

4. Advanced Composition. *Two sections. Second semester. Tu. Th.* 10:00. 2 h.
See course 3.

5. Argumentation and Debate. *First semester. M. W. F.* 2:30. 3 h.
At the end of the first semester seven students are selected from the membership of this class, to constitute the University debating squad. Those forming this squad will be given two additional credits. The course may be repeated, but no student shall receive more than a total of ten credits.

6. Journalism. *Throughout the year. M. W. F.* 10:00. 3 h.
Lectures, reports, practical work.

6a. Advanced Journalism. *Throughout the year. Tu. Th.* 2:30. 2 h.
See course 6.

7. History of the English Language. *First semester.* 11:30. 2 h.
Brief review of linguistics and of the relations of the Indo-European languages; history of English grammatical forms, sentence structure, and vocabulary.

8. Anglo-Saxon. *First semester. M. W. F.* 10.00. 3 h.
Bright's Anglo-Saxon Reader.

9. Anglo-Saxon. *Second semester. M. W. F.* 10:00. 3 h.
Beowulf.

10. Middle English. *First semester. Tu. Th.* 11:30. 2 h.
Supplementary reading, lectures, reports.
Emerson's Middle English Reader.

11. Chaucer. *Second semester. Tu. Th.* 11:30. 2 h. *Not open to freshmen.*
Lectures, reports.
Skeat's Texts of Canterbury Tales.

12. Shakespeare. *First semester. M. W. F.* 11:30. 3 h. *Not open to freshmen.*
The careful reading of three plays in class and the study of other plays read out of class.
Rolfe's Texts and Dowden's Primer.

13. Shakespeare. *Second semester. M. W. F.* 11:30. 3 h.
See course 12.

14. Pre-Shakespearean Drama. *First semester. Tu. Th.* 11:30. 2 h. *Not open to freshmen.*
Lectures, reports.
Manly's Specimens of Pre-Shakespearean Drama.

15. Interpretation of English Poetry. *Second semester. Tu. Th.* 11:30. 2 h. *Not open to freshmen.*
Lectures, reports.
Manly's English Poetry.

ORATORY AND EXPRESSIVE READING

1. Public Speaking. *First semester. W. or Th.* 1:30. 1 h.
A course in the elements of public speaking, with weekly declamations and original orations.
Emerson's Perfective Laws of Art, Vols. I and II.

2. Course 1 Continued. *Second semester. W. or Th.* 1:30. 1 h.
Extemporaneous speaking; briefs and forensics.
Emerson's Perfective Laws of Art, Vols. III and IV.

3. Advanced Oratory. *Throughout the year.* Hours to be arranged.
Special work for honor men, class and private.

4. Dramatic Art. *First semester. W. or Th.* 3:30. 1 h.
Theses written and delivered before class; dramatic criticism.
Curry's Imagination and Dramatic Instinct.

5. Course 4 Continued. *Second semester. W. or Th.* 3:30. 1 h.
Readings; theses on dramatic subjects; dramatic criticism; Shakespeare.
Curry's Imagination and Dramatic Instinct.

6. Elocution and Theory of Expression. *First semester. W. or Th.* 2:30. 1 h.
Recitations and reading before class; drill in reading; thesis.
Emerson's Evolution of Expression, Vols. I and II.

7. Course 6 Continued. *Second semester. W. or Th.* 2:30. 1 h.
Emerson's Evolution of Expression, Vols. III and IV.

8. Voice Culture and Dramatic Action. *Th.* 8:00. 1 h.
Development of voice; voice criterions; personal appearance; physical culture for grace and responsiveness, based on classic models.

LIBRARY SCIENCE AND PRACTICE

1. Library Science and Practice. *Throughout the year.*
Tu. 7:30, *lectures; five hours each week. laboratory.* 2 h.
The course aims to give an adequate working knowledge of library usage.
Lectures by members of the library staff, and invited members of the profession.
First semester. Routine: Preparation of books for shelves, classification, accessioning, cataloguing, binding, repairing, collating, charging systems, card catalogues and arrangement.
Second semester. Reference: indexes, encyclopedias, dictionaries, atlases, bibliographies, United States, state, and foreign documents, special libraries, administration.
Visits to neighboring libraries, binderies, and publishing houses, supplement lectures and laboratory instruction.

MATHEMATICS

1. Algebra and Trigonometry. *First semester.* 8:00, 9:00. 5 h.
2. a. Analytic Geometry. *Second semester.* 8:00. 5 h.
b. Algebra (Theory of Equations). *Second semester.* 8:00. 3 h.
3. Mathematical Teaching. *First semester.* 8:00. 3 h.
4. History of Mathematics. *Second semester.* 8:00. 3 h.
5. College Algebra. *First semester.* 8:00, 9:00. 5 h.
6. a. Trigonometry. *Second semester.* 8:00, 9:00. 5 h.
b. Algebra (Determinants). *Second semester.* 9:00. 3 h.
7. Analytic Geometry. *First semester.* 9:00. 5 h.
8. Differential Calculus. *Second semester.* 9:00. 5 h.
9. Differential Calculus. *First semester.* 10:00. 5 h.
10. Integral Calculus. *Second semester.* 10:00. 5 h.
11. Differential Equations. *First semester.* 11:30. 5 h.
12. a. Solid Analytic Geometry. *Second semester.* 11:30. 5 h.
b. Theory of Functions. *Second semester.* 11:30. 5 h.
13. a. Elementary Solid Geometry. *First semester.* 11:30. 3 h.
b. Life Insurance. *First semester,* 11:30. 2 h.

14. a. Modern Geometry. *Second semester.* 11:30. 5 h.
b. Modern Accounting. *Second semester.* 11:30. 3 h.

For the subjects which students in the College of Liberal Arts may elect from the College of Engineering, and for the credits which will be allowed therefor, see page 115.

For courses for graduates only, see page 147.

PHYSICS

1-2. General Physics. *Throughout the year. Lectures, two hours, recitations, two hours.* 4 h.

A general course extending throughout the year, covering the mechanics of solids, liquids, and gases, and the phenomena of heat, electricity, magnetism, sound, and light.

This course is intended not only to furnish an indispensable basis for the study of any branch of pure or applied science, but also as an elementary presentation of those facts and principles relating to the physical world which are today recognized as a part of the common knowledge of all educated persons. The lectures are fully illustrated by apparatus and experiments, thus enabling the student to observe personally most of those phenomena which have played an important role in the development of physical theories. The recitations are based upon the lectures and a text-book which the student is expected to study systematically in parallel with the lectures.

Prerequisite: an elementary knowledge of plane trigonometry.

3-4. General Laboratory Physics. *Throughout the year. One three-hour period per week.* 1 h.

Elementary laboratory work in the subjects of mechanics, heat, sound, light, electricity, and magnetism. This course is designed to give the student a more intimate knowledge of physical laws and to familiarize him with instruments of precision and methods of measurement.

Prerequisite: an elementary knowledge of plane trigonometry; it is strongly recommended that courses 3-4 be taken in parallel with 1-2.

5. Descriptive Astronomy. *Second semester.* 2 h.

The course is conducted by means of lectures and recitations, and is designed to furnish that amount of information upon

the subject of astronomy which may fairly be expected of persons who have what is called a "liberal education." Some time is given to the solution of certain problems in practical astronomy, each student obtaining the necessary data from his own observations and the ephemeris.

Prerequisite: an elementary knowledge of trigonometry.

6. Theoretical Mechanics—Statics; Centers of Mass; Moments of Inertia. *Second semester.* 2 h. *Taken regularly in the second semester of the sophomore year.*

A course of lectures and recitations based upon both the lectures and text-book, and involving a thorough study of the conditions of equilibrium of particles and rigid bodies. Calculation of centers of mass and moments of inertia.

Prerequisite: differential and integral calculus; open, however, to those who are beginning integral calculus the second semester.

7. Theoretical Mechanics—Dynamics. *First semester.* 3 h. *Taken regularly in the first semester of the junior year.*

Lectures, with recitations based upon the lectures and a text-book.

A study of the motion of particles and rigid bodies. Emphasis is laid upon the fundamental physical principles of the subject and upon the fact that the mathematical processes involved are simply an easy means of arriving at an understanding of a physical problem. An endeavor is also made to impart to the student a certain facility in translating physical conceptions into mathematical symbols and mathematical formulæ into concrete ideas.

Prerequisite: differential and integral calculus.

8. Theory of Electricity and Magnetism. *First semester.* 4 h.

Lectures and recitations.

An elementary presentation of the mathematical theory of electricity and magnetism and the theory of electrical instruments. Among the subjects treated are the following: a brief discussion of the theory of errors, with special application to measurements made in the electrical laboratory; the general principles of electro-statics, including Gauss' Theorem and its applications; condensers and dielectrics; magnetism and the properties of magnets; laws of the electric current; energy of

the electric current; magnetic and electro-magnetic induction; magnetic effects of electric currents; thermoelectric currents; the general theory of several instruments of fundamental importance in electrical measurements; electric and magnetic units.

Prerequisite: courses 1 and 2, or their equivalent, and differential and integral calculus.

9. Electrical Measurements. *First semester.* 6 h. to count as 2 h. *Taken regularly in the junior year.*

A laboratory course intended to accompany and to supplement course 7.

Students specializing in physics may arrange for extra work for further credit.

10. Theory of Electricity and Magnetism. *Second semester.* 2 or 3 h.

The course begins by emphasizing and elaborating the most important topics of the preceding course. Many omitted topics are also taken up, after which the course proceeds to the more advanced parts of the subject. Courses 7 and 10 are designed to furnish a thorough knowledge of fundamental facts and principles and a preparation for the further study of the most advanced electric and magnetic theory.

11-12. Introduction to Theoretical Physics. *Throughout the year.* 3 h.

Lectures, recitations, and parallel reading.

A course designed to give the student a wider knowledge of modern physical theories and to enable him to read with some ease the current literature and advanced treatises on theoretical physics. Among the subjects considered are the following: mechanics; vector analysis; kinetic theory of gases, thermodynamics; theory of light; theory of electricity and magnetism.

Prerequisite: differential and integral calculus.

13-14. Advanced Experimental Physics. *Either or both semesters. Hours and credit to be arranged.*

Laboratory work on selected problems of considerable experimental difficulty, involving a somewhat advanced knowledge of theoretical physics.

Prerequisite: courses 1, 2, 3 and 4, and calculus.

15. The Theory of Electrons. *Second semester.* 3 h.

A course of lectures and parallel reading dealing with the evidence which has led to the idea of the electron and to the atomic structure of electricity. The discharge of electricity through gases, radioactivity, the corpuscular theory of matter, and the bearing of the electron theory on the explanation of various other physical phenomena are also considered.

Prerequisite: differential and integral calculus.

16. The Teaching of Physics. *Second semester.* 2 h.

This course is designed, primarily, for those who expect to teach physics in secondary schools. Sources of material, methods, aims, laboratory equipment and instruction, things which should be emphasized, those which may be omitted, etc., will be considered both by lectures and by reports and discussions. Members of the class will also make a study of recent criticism of secondary physics teaching with the view of arranging a course which will be satisfactory both to the high school and the college.

17. Vector Analysis. *Throughout the year.* 2 h.

A study of the system of Vector Analysis developed by Gibbs, with applications to problems of mathematical physics.

Prerequisite: courses 6, 7, 11 and 12, and calculus.

For courses for graduates only, see page 150.

CHEMISTRY

1. General Inorganic Chemistry. *Throughout the year.* 11:30. 3 h.

A course of lectures and recitations dealing with the laws and theories of chemistry, together with a study of the elements and their most important compounds.

This course is especially designed for those who have not studied chemistry. Those electing course 1 must also elect course 2. Those presenting satisfactory high-school credits may select courses 3 and 4 instead of 2.

2. General Inorganic Chemistry. *Throughout the year. Any two periods.* 8:00 or 1:30. 2 h.

A detailed laboratory course supplementing course 1.

3. Qualitative Analysis. *First semester. Any two periods.* 8:00 or 1:30. 2 h.

A course in the identification and separation of the more common bases and acids.

4. Qualitative Analysis. *Second semester. Any two periods.* 8:00 or 1:30. 2 h.

A continuation of course 3.

5a. Quantitative Analysis. *First semester. Any three periods.* 8:00 or 1:30. 3 h.
Laboratory. Gravimetric.

A beginners' course in quantitative analysis, comprising the more important separations and determinations.

5b. Quantitative Analysis. *First semester.* 10:00. 2 h.
Lectures.

A course in chemical calculations, together with the theory of precipitation and other chemical theories and laws relating to gravimetric analysis.
This course must be taken with course 5a.

6a. Quantitative Analysis. *Second semester. Any three periods.* 8:00 or 1:30. 3 h.
Laboratory. Volumetric.

A course on the preparation of standard solutions and their applications in analysis.

6b. Quantitative Analysis. *Second semester.* 10:00. 2 h.
Lectures.
A course similar to 5b. This course must be taken with 6a.

7. Analysis of Iron and Steel. *Second semester. Any two periods.* 8:00 or 1:30. 2 h.

A practical course in the laboratory methods in use in the leading steel works.
Prerequisite: courses 5a, 5b, 6a and 6b.

8. Sanitary Water Analysis. *Second semester. Any two periods.* 8:00 or 1:30. 2 h.

A course in the chemical and bacteriological examination of water with regard to its use for drinking purposes.
Prerequisite: courses 5 and 6.

9. Mineral Water Analysis. *One semester. Any two periods.* 8:00 or 1:30. 2 h.

A course in the analytical methods used in the determination of the mineral and gaseous constituents of natural waters.

Prerequisite: courses 5 and 6.

10. Ore Analysis. *One semester. Any five periods.* 8:00 or 1:30. 5 h.

A course in the analysis of ores, slags, etc., by the technical methods in use in mills and smelters.

Prerequisite: courses 5 and 6.

11. Gas Analysis. *One semester. Any two periods.* 8:00 or 1:30. 2 h.

A course in the methods for determining the constituents of gás mixtures, especially as applied to illuminating gas and furnace gases.

Prerequisite: courses 5 and 6.

12. Organic Chemistry. *First semester.* 2:30. 4 h.

Lectures.

A study of the methods of preparation and the properties of the more important organic compounds. Special stress is laid upon the theories underlying the subject and the proofs of the constitution of most of the substances studied.

13. Organic Chemistry. *First semester. Time to be arranged.* 2 h.

Laboratory.

A laboratory course supplementing course 12, designed to give practice in organic laboratory methods.

This course may be taken with course 12.

14. Laboratory Practice in Organic Preparations. *Second semester. Any three or five periods.* 8:00 or 1:30. 3 h. or 5 h.

An advanced course in the preparation of typical aliphatic and aromatic compounds.

Prerequisite: course 12.

15. Ultimate Analysis of Organic Compounds. *First semester. Any two periods.* 8:00 or 1:30. 2 h.

A course in the determination of carbon, hydrogen, nitrogen, sulphur, and the halogens in organic compounds.

Prerequisite: courses 5, 6, and 14.

16. Food Analysis. *Either semester. Any three or five periods.* 8:00 or 1:30. 3 h. or 5 h.

A course giving practice in food laboratory methods.

Prerequisite: courses 5, 6, 12 and 14.

17. Physical Chemistry. *First semester.* 10:00. 3 h.

Lectures.

A course presenting the conceptions of the modern physico-chemical theories concerning the states of aggregation of matter, solutions, thermo-chemistry, equilibria, and chemical kinetics.

18. Physico-Chemical Laboratory Methods. *First semester.* 8:00 or 1:30. 2 h.

Laboratory practice in the determination of densities, molecular weights, thermo-chemical and optical constants, and the study of chemical statics and kinetics.

This course must be taken with course 17.

19. Electrochemistry. *Second semester.* 10:00. 2 h.

Lectures.

A study of the phenomena of electrolysis, Faraday's Law, Hittorf's Transport-Numbers, the Law of Kohlrausch, the Solution Theory of Van't Hoff, the Dissociation Theory of Arrhenius, and the osmotic theory of the current of electric cells.

20. Electrochemical Analysis. *One semester. Any two periods.* 8:00 or 1:30. 2 h.

Laboratory practice in the determination and separation of the common metals by rapid electrolytic methods.

21. Laboratory Practice in Electrochemistry. *Second semester. Any two periods.* 8:00 or 1:30. 2 h.

Exercises in electrical conductivity, Faraday's Law, Transport-Numbers, and the study of electrical potentials of cells.

Prerequisite: course 19, or may be taken with course 19.

22. Physiological Chemistry. *Second semester. Time to be arranged.* 2 h.

Lectures.

This course is given primarily for medical students, but is open to students in other departments.

Prerequisite: courses 13 and either 14 or 15.

23. Physiological Chemistry. *Second semester. Time to be arranged.* 2 h.

Laboratory.

This course is supplementary to course 22, and must be taken with it.

A laboratory study of the chemistry of enzymes, carbohydrates, salivary digestion, proteins, gastric and pancreatic digestions, bile, putrefaction products, feces, blood, milk, tissues, and urine.

24. Industrial Chemistry. *Second semester. Time to be arranged.* 2 h.

A lecture course on the principal chemical industries.

No laboratory period of less than three consecutive hours will be accepted.

BIOLOGY

I. GENERAL BIOLOGY AND SANITARY SCIENCE.

1-2. General Biology. *Throughout the year. Tu. Th.* 1:30, *lectures; M. W. F. one hour each day, laboratory.* 3 h. *Open to all.*

A course consisting of lectures and laboratory work designed for those who wish to become acquainted with the principles of modern biology, with or without the intention of pursuing the subject farther. The course deals with animals and plants as living things, including discussions of life processes, relations to environment, adaptation, distribution, principles of heredity and evolution and the natural history of man. There is also offered a synopsis of classification and some account of the history of biology, with details concerning eminent naturalists.

The two-hour course in sanitary science is so arranged that it may be taken by those in biology, the two aggregating five hours. This combination is recommended as combining the theoretical and applied branches of biological science.

3. Sanitary Science. *Two divisions. First semester. Tu. Th.* 10:00, 2:30, *lectures; quiz sections to be arranged at additional times. Open to all; recommended to freshmen.*

The control of disease by methods of public and personal hygiene; heredity and disease; eugenics; school hygiene; domestic hygiene; food, water and milk supplies; vital statistics and their meaning; Public health administration.

This course may be taken with the three-hour course in General Biology to count as five hours required science of the freshman or sophomore year.

4. Sanitary Science. *Second semester. Open to those who have had course 3; others desiring to enter should first consult the professor.*

The germ theory; infection; immunity; resistance; cause, prevention and control of disease.

II. BOTANY.

1-2. General Botany. *Throughout the year. M. W. F.* 9:00, *lectures; Tu. Th.* 9:00 to 11:00, *laboratory.* 5 h.

Structure, behavior, life history and classification of plants. In the second semester considerable time is given to the botany of Colorado.

Prerequisite: general biology and elementary chemistry.

3. Forest Botany. *First semester. M. Tu. W. Th. F.* 8:00. 3 h. *Open to students who have had general biology; others on consultation. Two recitations and three one-hour laboratory periods.*

Study of forests; structure, characteristics, development; the value of forests and forest products; conservation of natural resources.

4. Economic Botany. *Second semester. M. Tu. W. Th. F.* 8:00. *Open to students who have had general biology; others on consultation.*

A study of plant products useful to man; grains, fruits, garden vegetables, ornamental plants, textile fibers, spices, drugs, starches, vegetable oils; the breeding of new and improved types of plants.

5. Ecology and Taxonomy.

A course, chiefly field work, dealing with plants in their relation to climate, soil and other environmental factors; classification of flowering plants.

Given in the summers at the Mountain Laboratory at Tolland, Colorado.

6. Plant Morphology or Physiology. *First semester. For graduates and advanced undergraduates.*

7-8. Biological Seminar. *Throughout the year. Tu. Th.* 3:30. Critical reading of some recent work of exceptional merit in botany or zoology; individual reports; informal quizzes; occasional lectures.

9. Bacteriology.

This course is given by Prof. Clough T. Burnett of the School of Medicine.

For courses for graduates only, see page 151.

III. ZOOLOGY.

1-2. General Zoology. *Throughout the year.* 5 h. *Not given in* 1912-1913.

The animal kingdom from the lowest to the highest group; structure; behavior; classification.

Prerequisite: general biology and elementary chemistry.

3. Physiology. *First semester. M. W. F.* 8:00.

Recitations, lectures, some demonstrations and laboratory work.

The life activities of animals, especially man.

Prerequisite: general biology and elementary chemistry.

A three-hour laboratory course in general physiology will probably be offered in the second semester.

4. Histology and Embryology. *Second semester. M. Tu. W. Th. F.* 7 h. *Primarily for medical students.*

5. Cytology. *First semester. M. W. F.* 1:30, 3:30. 3 h. *For graduates and advanced undergraduates; open only on consultation.*

Laboratory, lecture and reference work, six or more hours per week.

6. Field Biology.

A course in the study of animals in their natural surroundings; methods of collecting, preserving, etc.; distribution of animals in relation to physiographic and climatic factors.

Given in the summers at the Mountain Laboratory, Tolland, Colorado.

7. Comparative Anatomy. *Second semester.* 1 h. *Primarily for medical students; to others on consultation.*

8-9. Biological Seminar. *Both semesters. Tu. Th.* 3:30. For an account of the course see under botany.

10. Human Anatomy. *Open to upper classmen who are also matriculated in the School of Medicine.*

For courses for graduates only, see page 152.

NOTE—Students intending to specialize in biological subjects are advised to spend at least one summer at the Mountain Laboratory at Tolland, Colorado. (See Summer Session announcement.)

GEOLOGY AND MINERALOGY

I. GEOLOGY AND PHYSIOGRAPHY.

A. Courses for Undergraduates.

1-2. General Geology. *Throughout the year. Daily.* 1:30. *First half of first semester: M. W. F.* 1:30, *lectures; Tu. Th.* 1:30-4:30, *field work. Second half of first semester: M. Tu. W. F.* 1:30, *lectures; Th.* 1:30-3:30, *laboratory work. Second semester: M. Tu. W. F.* 1:30, *lectures; Tu.* 1:30-3:30, *laboratory work.* 5 h. *each semester.*

The course will consist of a study of the principles of geology, with special reference to the geological history of North America. Field study will be an important feature of the course. (By special arrangement, students physically unable to take the field work, may register for 4 hours' credit in the first semester.)

Prerequisite: high-school chemistry or college chemistry.

3-4. Physiography. *Throughout the year. M. W.* 9:00, *lectures; F.* 9:00-11:00, *field or laboratory.* 3 h. *each semester. Open to all who have not had course 1-2 or its equivalent.*

This course will be adapted to the needs of those who expect to teach physical geography in the high schools. It will include a study of the atmosphere, the waters of the earth and their work as geological agents, the rocks, the agencies of geological and geographical change, and the development and history of the physical features of the earth. Large use will be made of the local field for illustrative purposes. This course may be taken with Mineralogy course 1-2 to complete ten hours' science.

5-6. Engineering Geology. *Throughout the year. M. W. F.* 11:30, *with two hours' additional laboratory work per week, arranged to suit the convenience of the class.* 3 h. *each semester.*

The course will include a general discussion of the principles of geology, and a study of the geological materials important in engineering.

B. Courses Open to Undergraduates and Graduates.

7-8. Economic Geology. *Throughout the year. First semester, M. W. F.* 10:00; *second semester, M. W. F.* 11:30, *with two hours' additional laboratory work per week, arranged to suit the convenience of the class.* 3 h. *each semester.*

A study of the mineral resources of the United States, including the origin and character of ore bodies, the ores of iron, copper, lead, zinc, gold, silver, etc.; the extraction and uses of the metals; fuels, building materials, fertilizers, mineral waters, etc.

Prerequisite: course 1-2, or 3-4, and Mineralogy 1-2.

Mineralogy course 3-4 is also strongly recommended.

9-10. Advanced Geology. *Throughout the year. M. W. F.* 2:30. 3 h. *each semester. Given on alternate years. Not given in* 1912-1913.

A special study of the problems of dynamic, structural and historical geology.

Prerequisite: courses 1-2. Mineralogy 3-4 is strongly recommended.

11-12. Geology of Colorado. *Throughout the year. M. W. F.* 2:30. 3 h. *each semester. Given on alternate years. Given* 1912-1913.

A study of the dynamic, structural, historical and economic geology of Colorado.

Prerequisite: courses 1-2, or 3-4, and Mineralogy 3-4.

13-14. Advanced Field Geology. *Throughout the year. First semester, M. W. F.* 1:30 to 4:30; *second semester, to be arranged.* 3 h. *each semester.*

The course is designed to train the student in all kinds of geological field work. The methods used are those employed by the U. S. Geological Survey.

Prerequisite: superior work in course 1-2. Registration only after consultation with the Department of Geology.

15. Advanced Physiography. *Second semester. Tu. Th.* 9:00-11:00.

The course will be a continuation of the work of course 3-4, and will deal largely with the laboratory side of the work, and the methods of teaching Physical Geography and Physiography.

Prerequisite: course 1-2, or 3-4.

16. Geology. A Culture Course. *First semester. M. F.* 3:30. 2 h. *Open to juniors, seniors and graduates.*

A lecture and reading course for general culture rather than scientific training. It is intended to awaken an appreciative interest in that science which is so grandly illustrated in Colorado.

Prerequisite: a desire for a broader outlook upon earth history.

This course does not count toward the science requirement, nor will credit be given to students who have credit for course 1-2.

17-18. Paleontology. *Throughout the year.* 3 h. *each semester. The course is open to advanced students in geology and biology, on consultation with the professor. Not given in* 1912-1913.

It will include lectures on the principles of paleontology, and the facts concerning the development of types which characterize the several periods of geologic time; laboratory work in the identification, classification and description of fossil animals and plants, and the discussion of their stratigraphic and biologic position and significance.

Note—Students expecting to teach high-school geology or physical geography are advised to take courses 1-2, 3-4, 11-12, or 3-4, 11-12, and Mineralogy 1-2.

For courses for graduates only, see page 152.

II. MINERALOGY AND PETROLOGY.

A. Courses for Undergraduates.

1-2. ELEMENTARY MINERALOGY AND PETROLOGY. *Throughout the year. Tu. Th.* 9:00-11:00. 2 h. *each semester. Open to all who have not had college geology or mineralogy.*

The course is planned for those who want to know the common minerals and rocks, their relations and properties, but who lack the time or preparation for the more advanced courses in geology and mineralogy.

May be taken with Geology 3-4 to complete ten hours of science.

3-4. DETERMINATIVE MINERALOGY. *Throughout the year. Tu.* 8:00, *lectures and recitations; M. W. F.* 8:00-10:00, *laboratory.* 3 h. *each semester.*

The course includes elementary crystallography, descriptive mineralogy, the determination of minerals of economic importance by chemical and physical tests, and the study of collections of economic minerals.

Prerequisite: a course in general inorganic chemistry.

B. Courses Open to Graduates and Undergraduates.

5-6. ADVANCED MINERALOGY. *Throughout the year. Th.* 8:00, *lectures and recitations; M.* 8:00-10:00, *laboratory.* 2 h. *each semester.*

In this course minerals not previously studied are determined in the laboratory; a large part of the time is given to the rock-making minerals. Descriptive mineralogy is the chief subject of the lectures and recitations.

Prerequisite: course 3-4, but for exceptional reasons may be taken with 3-4, by arranging extra laboratory hours.

8. GEOLOGICAL MATERIALS FOR INDUSTRIAL CHEMISTRY. *Second semester. M. W. F.* 10:00. 3 h.

A study of the occurrence, properties and uses of geological products of economic value in chemical industries.

Prerequisite: a year in general chemistry.

9-10. PETROGRAPHY. *Throughout the year.* 3 h. *each semester.* Lectures, recitations, laboratory.

The mineral and chemical composition of rocks, their occurrence, origin, structural features and classification, and a

detailed study of the more important rock families. The study of thin sections under the microscope forms an important part of the course. This course should be taken in the senior year by students who expect to do graduate work in geology.

Prerequisite: geology 1-2, Mineralogy 3-4, and 5-6, but may be taken with course 5-6.

For courses for graduates only, see page 153.

PHILOSOPHY

1. History of Philosophy. *Throughout the year. Tu. Th.* 11:30. 2 h. *Open to all.*
   Course covers two years and may be begun in any semester.
2. Introduction to Philosophy. *Throughout the year. M. W. F.* 11:30. 3 h. *Open to all above rank of freshman.*
3. History of Ethics. *First semester. Tu. Th.* 9:00. 2 h. *Open to all.*
4. Logic. *First semester. Tu. Th.* 10:00. 2 h. *Open to all.*
5. History of Esthetics. *Second semester.* 9:00. 2 h. *Open to all.*
6. Esthetic Theories. *Second semester. Tu. Th.* 10:00. 2 h. *Open to all.*
7. History and Philosophy of Education. *Throughout the year. M. W. F.* 10:00. 3 h. *Open to all.*
8. Social Ethics. *Throughout the year. M. W. F.* 3:30. 3 h. *Open to all.*
9. Metaphysical Seminar. *Tu.* 7:00-9:00. 2 h. *For advanced students.*
   James and Bergson.

PSYCHOLOGY

1. General Psychology. (Education 1). *Two sections. First semester, M. W. F.* 1:30, 2:30; *with an additional hour to be arranged for recitations and conferences.* 3 h.
   This course gives, by means of lectures, recitations, experiments, and demonstrations, a general survey of the essential facts and fundamental laws of mind. It is prerequisite to all other courses in psychology and to the courses in education.

The student who expects to make psychology or education a major should take this course in his sophomore year.

2. Comparative Psychology. *Second semester. M. W. F.* 2:30. 3 h.

Continuation of course 1.

A systematic study of mental development in the race and in the individual. The course will sketch the development of the nervous impulse, of animal sense organs with reference to their habits, of instincts and intelligence in animals, and in cases of arrested development. With these simpler facts as a basis the development of mental functions in the individual in childhood and adolescence will be discussed with reference to educational theory.

3. Advanced Psychology. *First semester. Tu. Th.* 2:30. 2 h. *Open on consultation.*

Lectures, discussions, readings, and a thesis. An intensive study of selected problems; introspective exercises and an analytic study of mental phenomena.

Prerequisite: course 1 or its equivalent.

4. Pathological Psychology. *Second semester. Tu. Th.* 2:30. 2 h. *Open on consultation.*

Lectures, readings, and a thesis.

Disorders of sensation, memory, imagination, association, the emotions and volition. As course 2 traces the development of mental functions this course will discuss the order of their impairment. Mental hygiene and a study of such psychoses as throw light on the general and genetic problems of psychology.

Prerequisite; two courses in psychology.

5-6. Experimental Psychology. *Throughout the year. Tu. Th.* 1:30-3:30, *laboratory;* 3:30, *lecture.* 3 h.

This course gives an introduction to experimental psychology and aims to familiarize the student with modern psychological methods, apparatus, and results.

First semester. Typical experiments and demonstrations in the psychology of the senses, feeling and movement, with a study of individual differences.

Second semester. Experiments in perception and the higher mental processes; time, intensity and extensity of mental phe-

nomena; mental and physical tests and measurements; statistical methods.

7. Applied Psychology. (Education 2.) *Second semester. M. W. F.* 1:30. 3 h.

Continuation of course 1.

Lectures, readings, and a thesis.

The principles of psychology and the results of experimental pedagogy which are modifying the course of study and methods of instruction in the older schools of this country will be presented in this course. It is recommended that those students who are primarily interested in education take this course as a continuation of course 1.

Prerequisite: course 1, or its equivalent.

8. Social Psychology. (Education 15.) *First semester. Tu. Th.* 9:00. 2 h.

A discussion of mind from the point of view of the social group; the spread of ideas, emotions, and conduct within the group; the means of this spread; instinct, emotion, sentiment, and imitation; the psychology and functions of language; habit and attention; human occupations and their dependence upon instinct and imitation; occupations and institutions; mob mind, fads, crazes; social soundness and unsoundness; personality, as socially determined.

Prerequisite: courses 1 and 2, and Education 3 and 4, or their equivalents.

9. Child Study. *First semester.* 2 h.

A systematic study of the physical and mental development of children; a discussion of the facts, scientifically determined, of the psychology of childhood and adolescence, with their educational applications.

Prerequisite: course 7, or its equivalent.

10. Anatomy of the Central Nervous System.

See announcement of Medical School.

For courses for graduates only, see page 154.

EDUCATION

1. General Psychology. (Psychology 1). *Two sections. First semester. M. W. F.* 1:30, 2:30; *with an additional hour to be arranged for recitations and conferences.* 3 h.

This course gives, by means of lectures, recitations, experiments and demonstrations, a general survey of the essential facts and fundamental laws of mind. It is prerequisite to all other courses in psychology and to the courses in education. The student who expects to make psychology or education a major should take this course in his sophomore year.

2. Applied Psychology. (Psychology 7). *Second semester. M. W. F.* 1:30. 3 h.

Continuation of course 1.

Lectures, readings and a thesis.

The principles of psychology and the results of experimental pedagogy which are modifying the course of study and methods of instruction in the older schools of this country will be presented in this course. It is recommended that those students who are primarily interested in education take this course as a continuation of course 1.

Prerequisite: course 1 or its equivalent.

3-4. Principles of Education. *Throughout the year. M. W. F.* 8:00. 3 h.

An elementary discussion of the nature and scope, aims, means, and materials of Education; an examination of those facts, theories, and hypotheses of biology, physiology, anthropology, psychology, sociology, and economics which would seem to have significance for educational theory; a synthesis of what is found to be pertinent into a working creed for the educator.

Prerequisite: courses 1 and 2, or their equivalents.

5-6. Principles of Teaching:

a. Teaching in Elementary Schools.

b. Teaching in Secondary Schools. *Either semester. Tu. Th.* 8:00. 2 h.

The application of theories in the domain of practice; the method and methods of the teacher in the elementary or secondary schools; comparative study of general and special methods; improvements in methods; class-room problems and their solution; the learning process and its direction; the nature and conditions of thought; how we think and learn to think; how

to study; how to teach others to study; essentials in the learning and teaching of the elementary or secondary school subjects. This course must be taken with Practice Teaching; students will be assigned to the a or b section, according as they are assigned in Practice Teaching; the two sections will meet as one class for a portion of the time.

7-8. Practice Teaching and Class-Room Management. *Either or both semesters. Hours to be arranged.* 4-5 h.

Practice teaching is done in the public schools of Boulder, both elementary and secondary. The student teaches each day. The scheme is to separate from the regular classes a few who need instruction in a small group and under close supervision.

Prerequisite: courses 1, 2, 3 and 4, or their equivalents, and senior standing; those who register for this course must register also for Principles of Teaching.

9. History of Ancient and Mediæval Education. *First semester. M. W. F.* 10:00. 3 h. *Open to all except freshmen.*

This course deals with the history of culture and civilization, of social and intellectual as well as of definite school influences in China, India, Persia, and other Asiatic countries, as well as in Greece and Rome. It also deals with primitive Christian and Mediæval education.

10. History of Modern Education. *Second semester. M. W. F.* 10:00. 3 h. *Open to all except freshmen.*

In this course it is necessary to confine the work more strictly to academic education. The course deals with all the great reform movements from the Revival of Learning to the present day.

11-12. Comparative Study of School Systems. *Throughout the year. Tu. Th.* 10:00. 2 h.

A detailed comparative study of the school systems of Germany, France, England, and the United States as to ideals, organization, administration, methods, and efficiency.

Prerequisite: courses 1, 2, 3, 4, 9 and 10, or their equivalents.

13. General Anthropology. *First semester. M. W. F.* 9:00. 3 h.

An introductory study of the natural history of man; a survey of his physical and intellectual evolution; his agreements with and divergences from allied animals; theories of time and

place of origin; the main divisions of mankind and their general physical and mental characteristics; the general laws of man's existence and development, his relation to the rest of nature; beginnings and transmission of culture; chief divisions of primitive culture; prehistoric archæology.

14. General Ethnology. *Second semester. M. W. F.* 9:00. 3 h.

A comparative study of typical tribes and peoples in their respective geographical habitats; the cultural conditions as differentiating peoples; the variety and range of human activities; the elementary thoughts of mankind—primary elements of culture and mental life; the origin, growth, and present condition of the social, religious, industrial, political, and scientific occupations and institutions of various peoples; the identity of "the human" in the variety of peoples; culture grades and their causes.

15. Social Psychology. (Psychology 8). *First semester. Tu. Th.* 9:00. 2 h.

A discussion of mind from the point of view of the social group; the spread of ideas, emotions, and conduct within the group; the means of this spread; instinct, emotion, sentiment, and imitation; the psychology and functions of language; habit and attention; human occupations and their dependence upon instinct and imitation; occupations and institutions; mob mind, fads, crazes; social soundness and unsoundness; personality, as socially determined.

Prerequisite: courses 1, 2, 3 and 4, or their equivalents.

16. Education and Society. *Second semester. Tu. Th.* 9:00. 2 h.

A study of the interrelations of education and society; society's responsibilities to, and need of, the school; the school's duty to, and expectations of, society; educational institutions and forces other than the school; society an educational device.

Prerequisite: courses 1, 2, 3, 4 and 15, or their equivalents.

17. Advanced Practice Teaching. *Either or both semesters. Hours to be arranged.* 2-5 h.

A study by observation and experiment of particular and advanced problems of instruction and supervision.

Prerequisite: course 7 or 8, and instructor's permission; must be taken in connection with the Practicum in Education.

18. Practicum in Education. *Either or both semesters. Tu.* 7:30. p. m. 1 or 2 h.

The subject-matter of this course will vary from year to year. It will take up for special examination and investigation selected problems of importance in educational theory and practice. Provision will be made for independent investigations and for research in special problems. It will do the work of a journal club by devoting some time to current educational literature, events, contemporary educators, articles, books, educational news, and experiments.

Prerequisite: instructor's permission.

HISTORY

1. General Europe. 376-1815. *Throughout the year. M. W. F.* 2:30. 3 h.

Lectures, text-book and collateral readings.

A survey of the history of the western European nations from the invasions of the Germans to the Congress of Vienna. The first semester will end at the year 1300.

2. The French Revolution and the Napoleonic Era. *First semester. M. W. F.* 9:00. 3 h.

An intensive study of the causes, events, and institutions of the French Revolution and the Napoleonic Era, with a consideration of the permanent influences of the period on France and other countries.

Prerequisite: course 1.

3. Europe in the Nineteenth Century. *Second semester. M. W. F.* 9:00. 3 h.

Lectures and collateral readings.

Intended to supplement course 1 by a more detailed study of nineteenth century history. After a brief outline of the institutions and ideals of the Revolutionary and Napoleonic period, the course will deal with the development of the principal nations of modern Europe.

Prerequisite: course 1.

4. American History. 1760-1870. *Throughout the year. M. W. F.* 3 h. *Not open to freshmen.*

Lectures, text-book, and collateral readings.

The political history of the United States from the period of the Revolution through the Civil War. The introductory course in United States History.

5. Roman History from the Beginnings to A. D. 476. *First semester. M. W. F.* 9:00. 3 h. *Not given in* 1912-1913.

Special emphasis will be placed on: the rise, development and expansion of Rome; the political, social, and economic institutions of the Republic and of the Empire; the decline of the Empire; and the influence of Roman history and institutions on mediæval and modern times.

Prerequisite: course 1.

6. English Constitutional History. *Throughout the year. Tu. Th.* 11:30. 2 h. *Not given in* 1912-1913.

For this course given in the Law School credit will be given to students of the College of Liberal Arts.

Prerequisite: course 1.

7. The Colonial Expansion of Europe. *Throughout the year. Tu. Th.* 10:00. 2 h.

A study of European colonial policy and expansion from the sixteenth century to the present day. The major part of the course will be devoted to the problems and government of the colonies in the nineteenth century.

Prerequisite: course 1.

8. German History From the Beginnings to the Present Time. *Throughout the year. Tu. Th.* 11:30. 2 h. *Not given in* 1912-1913.

Special stress will be laid on the cultural influence of Germany, the nature and workings of the present German Empire, and the political and economic influences of Germany as a world power.

9. Modern England. *First semester.* 2 h.

A detailed study of selected problems in the history of England since 1832.

Prerequisite: two years of history.

10. Historical Bibliography. *First semester.* 2 h.

A course designed to acquaint students majoring in history with the various bibliographical aids. Exercises in the use of bibliographies and historical magazines.

Required of all junior and senior students majoring in history.

Prerequisite: two years of history.

11. Social and Industrial History of the United States. *Throughout the year.* 2 h. *Not given in* 1912-1913.

A history of the settlement of the Continent; the life of the people, and the development of natural resources. Particular attention will be paid to the evolution of the means of transportation, the rise of industries, improvements in agriculture, reclamation of the West, and like topics.

Prerequisite: course 3.

12. American Colonial History. *First semester.* 2 h. *Not given in* 1912-1913.

A brief outline narrative of the establisment of the thirteen colonies, and their political and social development to the period of the Revolution. Emphasis will be laid on the European inheritance of the colonists, and their development of American institutions in the new environment.

Prerequisite: course 3.

13. Civil War and Reconstruction. *Second semester.* 2 h. *Not given in* 1912-1913.

A study of the political and economic causes of the war, the events of the struggle, and of the subsequent reconstruction, both political and constitutional, consequent upon its outcome.

Prerequisite: course 3.

14. The Mediæval Church and the Reformation. *Throughout the year.* 3 h.

Lectures and reports.

A study of the life and the institutions of the Church from its origin through the period of the Reformation. The early organization of the Church and the persecutions, the rise of the Papacy and the greater monastic orders, the mediæval heresies and attempts at internal reform, and the culmination of the later mediæval struggles in the rise of the new churches of the sixteenth and seventeenth centuries.

Prerequisite: two years of history.

15. English Social and Industrial History. *Throughout the year.* 2 h.

A detailed study of certain phases of England's economic development; the mediæval manor and gilds; the rise of commerce; the Tudor system; the development of a colonial policy.

Prerequisite: two years of history.

16. The United States. 1787-1803. *For advanced students only.* Lectures and reports.

A detailed study of the period of the formation of the Union.

Prerequisite: two years of history.

Either course 15 or 16 will be given in 1912-1913, according to the requirements of the advanced students in history.

17. The Near Eastern Question. *First semester.* 2 h.

Lectures, collateral reading, reports.

The development and decline of Poland and the Ottoman Empire; the expansion of Austria, Prussia and Russia; the rise of the Balkan States; the Egyptian problem; the present status of the Near Eastern Question.

Prerequisite: two years of history.

18. Modern Internationalism. *Second semester.* 2 h.

Lectures, collateral reading, reports.

A study of the conditions making possible the growth of present-day internationalism; the existing international institutions, with special stress on The Hague Conferences, The Hague Tribunal, The Postal Union; various other official and private international institutions.

Prerequisite: two years of history.

19. The Renaissance. *Second semester.* 2 h. *Open to juniors and seniors who have had course 1. Not given in* 1912-1913.

Lectures, collateral reading and reports.

A study of the political and economic conditions of Italy and their bearing on the Renaissance movement; special stress is laid on the cultural features of the movement in Italy, and the spread of its influence in other European countries.

20. History of Ancient Israel to 70 A. D. *One semester.* 2 h. *Not given in* 1912-1913.

A study of the history and literature of the Hebrews to the coming of the Messiah; the history of the mission of Jesus and of the beginning of the expansion of Christianity.

For courses for graduates only, see page 154.

ECONOMICS AND SOCIOLOGY

1. Development of Industrial Society. *First semester. M. W. F.* 2:30. 3 h.

The aim of this course is to give an outline of English industrial development from the twelfth century to the present, in

order to show the genesis of modern industrial customs and rights. The course is designed to be introductory to all courses in economics.

2. Economic History of the United States. *Second semester. M. W. F.* 2:30. 3 h.
Lectures, reading, discussions.

3. General Principles of Economics. *First semester. M. W. F.* 10:00. 3 h.
Lectures, reading, discussions.
This course, or its equivalent, is prerequisite to all other courses in Economics, except courses 1 and 2.

For Graduates and Undergraduates.

4. Advertising. *Second semester. Tu. Th.* 9:00. 2 h.
Must be preceded by Principles of Economics, and Psychology.

5. Principles of Sociology. *First semester. M. W. F.* 2:30. 3 h.
Lectures, reading, discussions.
This course aims to present a brief outline of sociological thought; a discussion of the elements of association underlying social relations and institutions; the results of race, group and individual competition; the conditions of progress; some of the chief problems of Sociology—population, degeneration, pauperism, the dependent classes, crime, immigration, divorce, great cities, education.
Students are strongly advised not to elect this course until the senior year.

6. Special Problems in Sociology. *Second semester. M. W. F.* 2:30. 3 h.
Reading, reports, discussions, with occasional lectures.
Prerequisite: course 5.

7. The Theory and Application of Statistics. *First semester.* 2 h.
This course aims to present the subject of statistics as an instrument of research. It is designed for all students of social and economic problems.

8. National Administration. *First semester. M. W. F.* 3 h.
A study of the United States government in action.

9. State and Local Government. *Second semester. M. W. F.* 8:00. 3 h.
Comparative studies of the governmental institutions of the various states.

10. Politics. *Second semester. M. W. F.* 11:30. 3 h.
Comparative studies of the governments of the United States and leading European countries; political machinery.

11. Political Parties and Party Problems. *First semester. M. W. F.* 2:30. 3 h.
This course deals with the organization of political parties, with party machinery, and with such current party problems as direct primaries, proportional representation, the initiative, referendum, recall, civil service, corrupt practices acts, and methods of financing political parties.

12. City Government in the United States. *Second semester. M. W.* 1:30. 2 h.

13. City Government in Colorado. *Second semester. F.* 1:30. 1 h.

14. Consular and Diplomatic Service. *Second semester. Tu. Th.* 2:30. 2 h.
Designed primarily for those who desire to enter the foreign service of the United States.

15. History of Commerce. *First semester. Tu. Th.* 2 h.
A study of the development of the world's commerce with special attention to modern commercial organization.

16. Economic and Commercial Geography. *First semester. Tu. Th.* 8:00. 2 h.
Studies in the world's production and distribution.

17. Current Economic Problems. *Second semester. Tu. Th.* 10.00. 2 h.
Lectures, reading, discussions.
This course deals with the chief elements in such topics as the currency, money and banking, free trade and protection, the labor problem, taxation, the relation of the state to industrial action, and in general, such topics as may be of timely interest to students of economic science.

18. Money and Banking. *Second semester. M. W. F.* 8:00. 3 h.
Lectures, reading, reports.
Prerequisite: course 3.

19. Transportation. *Second semester. M. W. F.* 3 h.
Studies in railroad management, finance, rates, and government ownership.
Prerequisite: course 3.

20. Corporation Finance. *Second semester.* 2 h.
A study of the methods of organizing and financing large industrial companies.

21. Taxation. *Throughout the year.* 2 h.
A study of the revenue systems in the United States and foreign countries.

22. Theory of Investments (Life Insurance, etc.). *First semester.* 2 h.
Given in Department of Mathematics.

23. Theory and Practice of Accounting. 3 h.
Given in Department of Mathematics.

24. Great Industries. 3 h.
Studies of the railroad, trust, and monopoly problems.

25. Municipal Ownership and Other City Problems. 2 h.

26. Business Organization and Scientific Management. 3 h.
A study of the methods of increasing the efficiency of industrial organization.

For courses for graduates only, see page 156.

MUSIC

1. Harmony. *Throughout the year. M. W. F.* 11:30. 3 h.
Text-books: Jadassohn, Bussler.

2. Course 1 Continued. *Throughout the year. Tu. Th.* 11:30. 2 h.
Text-books: Jadassohn, Bussler.
Prerequisite: course 1.

3. Counterpoint. *Throughout the year. Tu. Th.* 10:00. 2 h.
Prerequisite: courses 1 and 2.

4. Canon and Fugue. *Throughout the year.* 2 h.
Prerequisite: courses 1, 2 and 3.

5. Composition and Orchestration. *Throughout the year.* 2 h.
Prerequisite: courses 1, 2 and 3.

6. History of Music. *Throughout the year. Tu.* 3:30. 1 h.
Open to all students.
Lectures.

7. Aesthetics and Philosophy of Music. *Either semester.* *W.* 7:30. 1 h. *Open only to graduate students and seniors.* Seminar.

ELECTIVES IN THE PROFESSIONAL SCHOOLS

In accordance with the general plan outlined on page 70, the courses tabulated below may be elected in the professional schools.

COLLEGE OF ENGINEERING.

The following subjects in the College of Engineering may be taken by all students in the College of Liberal Arts:

Drawing, 6; Descriptive Geometry, 3; Surveying, 8; Least Squares, 2; Applied Mechanics, 4; Graphic Statics, 3; Kinematics, 2; Hydraulics, 3; Thermodynamics, 2; Dynamo Electric Machinery, 4.

SCHOOL OF LAW.

Students in the College of Liberal Arts in their fourth year who declare their intention of proceeding to the degree LL.B. in the University of Colorado, may be allowed credit for twenty-two hours on the completion of all work required in the freshman year of the School of Law.

SCHOOL OF MEDICINE.

The two degrees of M.D. and B.A. may be conferred on the completion of six years' work, two years' credit (60 hours) being allowed on the completion of the full freshman and sophomore work in the Medical School. Beginning with the class that enters in 1913, the B. A. degree in the combined course will be given on the completion of three years in the College and one full year (30 hours) in the Medical School.

COLLEGE OF COMMERCE

FACULTY

JOHN BURTON PHILLIPS, Ph.D.,
Secretary of the College of Commerce.

The faculty of the College of Commerce consists of professors and instructors whose work contributes to the courses.

ANNOUNCEMENT

The College of Commerce was opened September, 1906. Its purpose is to provide professional training for the practical demands of business. It aims to prepare men for careers in Domestic and Foreign Commerce and Banking, Insurance, Transportation, Trade and Industry, Journalism, and in branches of the Public Service, like the Consular, in which a knowledge of business is essential. Heretofore universities and colleges have done all they could for the young man who wished to become a minister, teacher, lawyer, physician, journalist or engineer. The College of Commerce is developed in response to the demands of (1) enlarged commercial operations, (2) the public service, (3) the desire of parents to give their sons a college education and at the same time prepare them for their life work in business.

It is well known that the knowledge of the details of any particular line of business can be acquired only by actual experience. But the broad training given students in this department of the University will enable them to acquire the routine technicalities of any concern more easily than those whose minds have not been made flexible and acute by systematic training. They will thus the more readily assume positions of leadership and responsibility in the business world.

The curriculum of the College of Commerce is prepared with the following aims in view: (1) To furnish a certain amount of culture work which is the mark of college training. (2) To familiarize the student with the nature and workings of the industrial organism. This is attempted by studies in commercial geography, economics and history of commerce, transportation, banking, business organization and management. (3) To impart a certain amount of knowledge of the physical and chemical sciences and their applications to the industrial arts. (4) To give an acquaintance with the articles of commerce and the various industrial processes through which they pass. (5) To make the student acquainted with the

principles of commercial law. (6) To supply an equipment in modern languages. (7) To afford an opportunity to acquire some knowledge of a particular line of trade.

The work of the College of Commerce is on the same high plane as that of the other undergraduate departments of the University. The entrance requirements are the same and an equal number of hours' work is required for the Bachelor's degree.

ORGANIZATION

The College of Commerce offers four courses: 1. Banking. 2. Manufactures. 3. Journalism. 4. Trade, Transportation and Consular Service.

REQUIREMENTS FOR ADMISSION

The requirements for admission are the same as for the College of Liberal Arts. See page 45.

*SUBJECTS IN THE COLLEGE OF COMMERCE

(REQUIRED FOR GRADUATION.)

FRESHMAN YEAR

	I. Banking	II. Mfrs.	III. Jour.	IV. Trade, Etc.
1. ENGLISH LANGUAGE	6	6	6	6
2. SCIENCE	10 Chem.	10	10 Chem.	10
3. HISTORY	6	6	6	6
4. FRENCH, GERMAN OR SPANISH	10	10 French	10	10
	32	32	32	32

SOPHOMORE YEAR

5. ENGLISH LANGUAGE OR HIST. ENG. LIT.	4	4	4		4
6. MATH., SCIENCE	Math. 10	Math. 10 Chem. 10	——	Econ. Geol., Econ. Bot.	10
7. HISTORY OR ECONOMICS	6	——	Hist. 6 Econ. 10		6
8-9. FREE ELECTIVES	10	6	10		10
	30	30	30		30

* In addition to regular courses in the departments open to election, provision will be made for lectures on current problems, and practical topics by prominent business men.

JUNIOR AND SENIOR YEARS

LAW	†{10 / 20}	†[10 / 10]	10	†{10 / 20}
ECONOMICS				
ECON. GEOL., ECON. BOT., PHYSICS	——	[10]	——	——
ENGLISH LANG. AND LIT.	——	——	†{20 / 10}	——
CLASSICS (in Eng.)	——	——		——
FREE ELECTIVES	28	28	18	28
	58	58	58	58

The following courses are especially recommended for students in the College of Commerce:

Advertising.
Business Organization and Scientific Management.
History of Commerce.
Commercial Geography.
Economic History of the United States.
Taxation.
Transportation.
Corporation Finance.
Money and Banking.
Journalism.
Diplomatic and Consular Service.
Theory and Practice of Accounting.
Life Insurance.

For a further description of these courses, see Departments of Mathematics and Economics and Sociology in College of Liberal Arts.

---

† The brackets indicate the equivalent of the thirty hours of group electives required in the junior and senior years of the College of Liberal Arts. If subjects in the first two years, also characteristic of each of the four courses, are added, the sum is fifty hours for each group.

COLLEGE OF EDUCATION

FACULTY

FRANK E. THOMPSON, B.A.,
Secretary of the Faculty of the College of Education.

The Faculty of the College of Education consists of Professors and Instructors in the College of Liberal Arts whose work contributes to the various courses.

GENERAL STATEMENT

ORGANIZATION

A College of Education, to be a division of the College of Liberal Arts, was authorized by the Board of Regents in January, 1908. The report of the committee on a course of study was adopted in April, and the College was regularly opened for work in September of that year.

FUNCTION

It is intended that this College shall provide systematic and comprehensive training for those who may choose education as a *profession.* That there may be such a profession becomes every year more apparent, and it becomes apparent, too, that preparation for service in it must be as complete as for service in other professions. No human endeavor is more important than education; no class should be more carefully prepared than teachers. The need of the present time, expressed in most quarters in a demand, is that many of the teachers in the elementary schools, all of the teachers in the high schools, and all persons engaged in supervision of instruction shall have as a minimum of scholarship the B.A. degree, or its equivalent, and shall have made intensive study of the history, theory and practice of education. There is need, then, in each state for at least one professional school of collegiate rank which shall afford opportunity for training, both in theory and practice, for teaching, supervisory and administrative positions in elementary, secondary and normal schools.

The College of Education is designed to satisfy this need; it is a device of organization and administration to secure for the teacher studies along pertinent lines and in right proportions and sequence. The student looking toward teaching as a profession will be assisted and directed in the choice and prosecution of his work from the time of his matriculation until his graduation. He will not sacrifice anything of the culture of the Liberal Arts course, but through all the four years he will be growing toward efficiency and in professional spirit.

DESIGN OF CURRICULUM

The curriculum is designed to furnish to the prospective teacher who would be a leader in educational thought and thoroughly equipped for his work:

1. Courses calculated to give a broad acquaintance with knowledge and that culture rightly expected of the college graduate.

2. Courses in the subjects he expects to teach, of such character and so organized in sequence that when graduated he will be in some measure an authority in these subjects.

3. Courses that will give knowledge of:

   a. The constitution and needs of society.

   b. Child and adult natures and their possibilities for modification.

   c. The educational values of the various school subjects.

   d. The art of instruction—this knowledge to be both general and concrete and to come in large measure from actual practice in teaching.

   e. Educational history and its significance, both for the present and the future.

THE UNIVERSITY AND THE TRAINING OF TEACHERS

Inasmuch as education, in the professional sense, is service in an exceedingly complex field, the training required cannot be adequately given except in institutions of at least collegiate grade, nor in less time than that required for a college course. It is therefore peculiarly fitting that a College of Education should be organized in connection with, and largely out of the facilities of, the College of Liberal Arts in the University. Here are found the most complete equipment for securing the requisite scholarship, the best atmosphere for the development of scientific power and professional spirit, as well as the most highly selected students with whom to work.

College atmosphere gives a breadth of culture and has in it a suggestion of leadership which is to be found nowhere else. This has come to be so well recognized that for the high-school teacher in particular a college training is demanded in practically all sections. This was shown by the Report of the Committee of Fifteen, as early as 1895, later by the Standards for Accrediting of the North Central

and other Associations of Colleges and Secondary Schools, and recently in an emphatic way in the joint recommendations of the Committee of Seventeen on the Professional Preparation of High-School Teachers. In addition to this minimum requirement for academic preparation the same associations are insisting upon both general and special pedagogical training of a standard given only in university departments.

From the standpoint of the University, the training of educators is one of its most important means of service. Regarding the essential services of a university to the commonwealth as the scientific investigation of the people's problems, the training of certain persons for the professions, the bringing out of leaders, and the setting of culture standards, it is at once apparent that there is no more logical channel, especially for state university endeavor, than this training of expert educators. Teaching is one of the community's most important activities, and a rapidly growing body, both lay and professional, is expecting the same effectiveness in results as is achieved in other fields. The university can make no mistake in training these leaders, and the student can make no mistake in taking such training.

ADMISSION TO THE COLLEGE OF EDUCATION

1. Regular Standing.—The requirements for admission to regular standing in the College of Education are the same as for the College of Liberal Arts. See page 45.

2. Advanced Standing.—Students from universities, colleges, technical and teachers' training schools, who have been admitted to such institutions from a full four-year high-school course, will be admitted to such advanced standing as may be agreed upon by a committee composed of the Dean of the College of Liberal Arts, the Secretary of the College of Education, and the heads of departments in which advanced standing in desired.

3. Irregular Standing.—Persons who are 21 or more years of age and who give evidence of fitness to pursue particular studies may be admitted as special students without examination. Such special students may be graduated by fulfilling all requirements, both for admission and graduation.

COURSES OF STUDY LEADING TO THE DEGREE BACHELOR OF ARTS AND A BACHELOR'S DIPLOMA IN EDUCATION

The course of study of the College of Education covers a period of four years, 120 hours of credit being required for graduation. Graduates receive the degree of Bachelor of Arts and a Bachelor's Diploma in Education, which latter is a certificate of proficiency in the theory and art of education.

Attention is called to the following regulations:

1. All students must take fifty hours in some scheduled group; of these fifty hours they must take at least thirty in the junior and senior years.

2. A student may be allowed to substitute four hours of Literature for the required Composition of the sophomore year, on recommendation of the head of the Department, if he attains a satisfactory grade in the English Composition of the freshman year.

3. Students taking ten hours of either classics, mathematics, or science in the freshman year, must choose five hours in one of the other groups named, in the sophomore year.

4. The selection of the major subject should be made and signified to the Secretary of the College of Education not later than the beginning of the sophomore year.

5. The general regulations of the College of Liberal Arts apply in the College of Education.

The course of study of the College of Education is distributed as follows:

English Language (may include 4 hours of Literature)	10 hours
Classics and Mathematics, Mathematics and Science, or Science and Classics	15 hours
History or Economics	6 hours
Psychology (General and Applied)	6 hours
History of Education	6 hours
Principles of Education	6 hours
Principles of Teaching	2 hours
Practice Teaching	4 hours

Philosophy or Sociology or additional Education or Psychology..... 6 hours
Group Electives, "Major" and "Minors" (subjects the student expects to teach) .....50 hours

PREFERRED SCHEDULE

FRESHMAN YEAR

1.	English Language	6
2.	Classics, Mathematics or Science	10
3.	History or Economics	6
4.	Group of Free Electives	8
		30

SOPHOMORE YEAR

5.	English (or Literature)	4
6.	Classics, Mathematics or Science	5
7.	a. Psychology	6
	b. History of Education	6
8-9.	Group or Free Electives	9
		30

JUNIOR YEAR

	Principles of Education	6
	Electives (In Education Group)	3-6
10.	Group Electives (Subjects Student Intends to Teach)	20-15
11.	Free Electives	6-3
		30

SENIOR YEAR

	Principles of Teaching	2
	Practice Teaching	4
	Electives (In Education Group)	0-3
12.	Group Electives (Subjects Student Intends to Teach)	20-15
13.	Free Electives	9-6
		30

SUGGESTED GROUPS OF MAJORS AND MINORS

The purpose of the group elective requirement is to secure on the part of the teacher a thorough and systematic knowledge of the subject or subjects he proposes to teach. Usually the teacher in the secondary school is required to teach two or more subjects. Hence it is desirable that he should have a careful and extensive preparation in one subject and sufficient preparation for teaching at least the elementary steps of two or three additional subjects. The following groups of majors and minors are uniform with those of the College of Liberal Arts:

I. DIVISION OF LETTERS

GROUP (a) *Major*, Latin;	*Minors*,	Greek, European History.
GROUP (b) *Major*, Greek;	*Minors*,	Latin, English Literature.
GROUP (c) *Major*, German;	*Minors*,	French. History.
GROUP (d) *Major*, Romance Languages;	*Minors*,	Latin, German.
GROUP (e) *Major*, Comparative and English Literature;	*Minors*,	History, English Language.
GROUP (f) *Major*, English Language;	*Minors*,	English Literature, English History.

II. DIVISION OF SCIENCES

GROUP (g) *Major*, Mathematics;	*Minors*,	Physics, Astronomy.
GROUP (h) *Major*, Chemistry;	*Minors*,	Physics, Mathematics.
GROUP (i) *Major*, Physics;	*Minors*,	Mathematics, Chemistry.
GROUP (j) *Major*, Botany;	*Minors*,	Zoology, Chemistry.
GROUP (k) *Major*, Zoology;	*Minors*,	Botany, Chemistry.
GROUP (l) *Major*, Geology;	*Minors*,	Chemistry, Mineralogy.
GROUP (m) *Major*, Mineralogy;	*Minors*,	Geology, Chemistry.

III. DIVISION OF PHILOSOPHY

GROUP (n) *Major*, Philosophy; *Minors*, { Psychology, Biology.

GROUP (o) *Major*, Psychology; *Minors*, { Philosophy, Biology.

GROUP (p) *Major*, Education; *Minors*, { Psychology, Biology.

IV. DIVISION OF HISTORY AND ECONOMICS

GROUP (q) *Major*, History; *Minors*, { Economics and Sociology.

GROUP (r) *Major*, { Economics and Sociology; *Minor*, History.

PRACTICE TEACHING

With the co-operation of the Board of Education of Boulder there has been worked out a very satisfactory scheme for the practice teaching. Certain classes in the elementary schools and in the high school are divided by the superintendent into sections, and one section of each such division is given into the charge of a student teacher who is under the immediate supervision of the regular class teacher, the school principal, and some one from the College of Education, and under the general supervision of the head of that institution. The section of the class taken by the student teacher is as a rule the smaller section and is composed of those who have had difficulty in getting on—of those who, except for this arrangement, would be likely to fail of passing. Each student in such a section is to some extent a subject for special study and treatment, hence the novice teacher's attention is forced at once where it properly should be: upon the problem of how children learn rather than upon how teachers teach.

Each such section is a problem, and a set of problems, to be solved by the persons mentioned working together. The student teacher observes the work of the regular class (in which his section frequently recites), sees what the ideal for the day's lesson is and, when he meets his section, does what he can to attain that ideal. In this attempt he is helped by the supervisors and makes rapid progress toward efficiency.

PRACTICE TEACHING FACILITIES

Practice teaching is done in the Boulder public schools, both elementary and secondary. The Principal of the Boulder High School is Instructor in Secondary Practice Teaching, and the Superintendent of Schools is Instructor in Elementary Practice Teaching. This arrangement in part insures the very cordial relations that obtain between the city school officials and the University. The practice teaching in both the high and elementary schools is done under most natural conditions. The high school is one of the largest and most efficient in the State, and the elementary schools are second to none. The apprentice teachers are getting their experience in real schools.

GRADUATE WORK

Graduates of the College of Education, or of institutions of a similar character, may continue the study of education in the Graduate School of the University as candidates for the degree of Master of Arts, and for the Master's Diploma in Education. One year of resident study is required. The candidate for the higher degree and the diploma in education is expected to devote one-half of his time to academic subjects and one-half to professional study in advance of the requirements for the Bachelor's degree, a part of which must demonstrate through practice teaching superior efficiency in instruction. The Master's Diploma in Education is an honor certificate, given only to those who, in addition to fulfilling, by resident work and a thesis, the requirements for the Master's Degree of the Graduate School of the University, give evidence of eminent educational ability and capacity for leadership.

COMMITTEE ON THE RECOMMENDATION OF TEACHERS

The College of Education, through the Committee on the Recommendation of Teachers, will make every effort to place its students and graduates in the positions for which their general education and professional preparation have equipped them. The committee maintains communication with Superintendents and Boards of Education with reference to vacancies, and invites correspondence from school authorities who are in need of professionally trained teachers. Students of the University, who intend to teach, and graduates of the University, who are now engaged in teaching and who wish to secure better positions should register with the committee.

STATE DIPLOMAS

The 17th General Assembly passed House Bill No. 423 in which Sections 4 and 7 provide as follows:

Sec. 4. The State Board of Education shall issue State diplomas upon application, without examination, to applicants who shall be graduates of colleges situated within the State of Colorado, which maintain a standard four-year course of collegiate work and require four standard years of high-school work or its equivalent, for admission, and who shall also exhibit evidence satisfactory to the State Board of Education of good moral character, and who shall also present evidence to the State Board of Education that they have twenty-four months of successful teaching experience, and who shall also produce evidence satisfactory to the State Board of Education, of professional training equivalent to at least one-sixth of a standard four-years' college course in at least three of the following groups of subjects, one of which shall be Practice Teaching, to-wit:

(1) General and Educational Psychology.
(2) History of Education.
(3) Science and Principles of Education.
(4) Practice Teaching and Special Methods.
(5) Organization and Management of Schools.
(6) Philosophy, Sociology and Anthropology.

Sec. 7. State diplomas, granted under the provisions of this act, shall license the holders thereof to teach in the public schools of any county, city, town, or district in the State without the necessity of any other examination for a period of five years, unless sooner revoked by the State Board of Education, and at the expiration of said time, the same may be renewed for a like period of five years in the discretion of the State Board of Education, and at the expiration of this time, the same may be renewed for life upon presentation to the State Board of Education of satisfactory evidence of professional growth and efficiency; *Provided*, That the State Board of Education shall issue upon application, without examination, to those persons who possess the qualifications set forth in Section 4 of this act, experience in teaching alone excepted, a temporary, non-renewable certificate to teach for five years in the public schools of Colorado.

SCHOOL OF SOCIAL AND HOME SERVICE

FACULTY

The Faculty of the School of Social and Home Service consists of Professors and Instructors in the College of Liberal Arts, School of Medicine, School of Pharmacy, and the Training School for Nurses, whose work contributes to the various courses.

GENERAL STATEMENT

FUNCTION

The course in The School of Social and Home Service is designed for three classes of students: (a) Those who expect to enter training schools for nurses; (b) those desiring to enter social-service activities, such as belong to the work of charitable and corrective institutions, social settlements, etc.; (c) those who wish a short course to prepare themselves for the management of the home.

DESIGN OF CURRICULUM

As will be seen from an examination of the course of study there are four main lines of work which the student pursues, viz: (a) English, through the entire two years; (b) Science, as a foundation for a knowledge of health, represented by chemistry and the biological sciences, together with various applied subjects, such as Principles of Nursing, Principles of Surgery, Materia Medica, Clinical Laboratory Methods, Infant Hygiene; (c) Economics and Sociology, including Social Ethics; (d) Psychology.

The course is made up of subjects presented by members of the various faculties of the University. A detailed statement may be found in the announcements of the College of Liberal Arts, School of Medicine, School of Pharmacy, and the Training School for Nurses.

ADMISSION AND FEES

Entrance requirements and fees are the same as for students in the regular B.A. course. Students will present their high-school credentials to the Dean of the College of Liberal Arts.

See pages 45, 55.

RELATION TO THE REGULAR B. A. COURSE

Those who finish the entire course will receive 58 hours' credit toward the B.A. degree and can complete all the requirements for that degree by two years' additional work in properly selected college subjects.

CERTIFICATE

The course is so arranged that students will have preliminary training of considerable value even if obliged to drop the work at the close of the first year. A certificate showing the work done will be issued to students who complete either one or two years of the course.

COURSE OF STUDY

FIRST YEAR

FIRST SEMESTER		SECOND SEMESTER	
English	3	English	3
Chemistry	5	Chemistry	5
Sanitary Science	2	Sanitary Science	2
Anatomy and Physiology	3	Physiology (Lab.)	3
Problems in Economics	3	Principles of Nursing	1
		Elective	2
	16		16

SECOND YEAR

FIRST SEMESTER		SECOND SEMESTER	
English	2	English	2
Principles of Economics	3	Problems in Sociology	2
Psychology (General)	3	Psychology (Education)	3
Accounting	3	Social Ethics	3
Bacteriology	2	Clin. Lab. Methods	1
Principles of Surgery	2	Infant Hygiene	1
Infant Hygiene	1	Materia Medica	2
		Elective	2
	16		16

GRADUATE SCHOOL

*FACULTY

James H. Baker, M.A., LL.D., President.

J. Raymond Brackett, B.A., 1875, Bates; Ph.D., 1880, Yale.
Professor of Comparative and English Literature; Dean.

Ira M. DeLong, B.A., 1878, M.A., 1881, Simpson College.
Professor of Mathematics.

Fred B. R. Hellems, B.A., 1893, Toronto; Ph.D., 1898, Chicago.
Professor of Latin.

Charles C. Ayer, B.A., 1889, Harvard; Ph.D., 1896, Strasburg.
Professor of Romance Languages.

George Norlin, B.A., 1893, Hastings College; Ph.D., 1899, Chicago.
Professor of Greek.

Francis Ramaley, B.S., 1895, Ph.D., 1899, Minnesota.
Professor of Biology.

Melanchthon F. Libby, B.A., 1890 Toronto; Ph.D., 1900, Clark.
Professor of Philosophy.

John Burton Phillips, B.A., 1889, M.A., 1891, Indiana; Ph.D., 1897, Cornell.
Professor of Economics and Sociology.

William H. Pease, B.A., 1894, Toronto; LL.B., 1897, Colorado.
Professor of Law.

John Bernard Ekeley, B.A., 1891, M.A., 1893, Colgate; Ph.D., 1902, University of Freiberg in Baden; Sc.D., 1911, Colgate.
Professor of Chemistry.

Russell D. George, B.A., 1897, M.A., 1898, McMaster.
Professor of Geology.

* This Faculty is made up of the Professors of the various Faculties of the University who offer work in the Graduate School.

JOHN D. FLEMING, B.A., 1875, Central University; LL.B., 1879, Louisville; LL.D., 1910, Central University.
Professor of Law.

MILO S. KETCHUM, B.S., 1895, C.E., 1900, Illinois.
Professor of Civil Engineering.

HERBERT S. EVANS, B.S., 1898, E.E., 1900, Nebraska.
Professor of Electrical Engineering.

JOHN A. HUNTER, B.S., 1890, M.E., 1896, Pennsylvania State College.
Professor of Mechanical Engineering.

THEODORE D. A. COCKERELL,
Professor of Systematic Zoology.

GEORGE M. CHADWICK,
Professor of Music.

JAMES F. WILLARD, B.S., 1898, Ph.D., 1902, Pennsylvania.
Professor of History.

OLIVER C. LESTER, B.A., 1897, Central College, Missouri; M.A., 1902, Ph.D., 1904, Yale.
Professor of Physics.

FRANK E. THOMPSON, B.A., 1901, Stanford.
Professor of Education.

JUNIUS HENDERSON, B.A., 1908, Colorado.
Professor of Natural History and Curator of Museum.

JOHN S. MCLUCAS, B.A., 1893, South Carolina College; B.A., 1895, M.A., 1899, Harvard.
Professor of English.

GRACE FLEMING VAN SWERINGEN, B.L., 1893, Cornell; Ph.D., 1904, University of Berlin.
Professor of German.

CLOUGH T. BURNETT, M.D., 1908, Michigan.
Professor of Bacteriology.

MILO G. DERHAM, B.A., 1892, Cornell; Ph.D., 1904, Colorado.
Professor of Latin.

SAUL EPSTEEN, B.S., 1900, California; Ph.D., 1901, University of Zurich.
Professor of Engineering Mathematics; Secretary.

LAWRENCE W. COLE, B.A., 1899, Oklahoma; M.A., 1904, Ph.D., 1910, Harvard.
Professor of Psychology and Education.

RALPH D. CRAWFORD, B.A., 1905, M.A., 1907, Colorado.
Assistant Professor of Geology.

DAVID R. JENKINS, B.S. (E.E.), 1904, E.E., 1907, Colorado.
Assistant Professor of Electrical Engineering.

CLEMENT C. WILLIAMS, B.S. (C.E.), 1907, Illinois; C.E., 1909, Colorado.
Assistant Professor of Civil Engineering.

S. ANTOINETTE BIGELOW, B.A., 1893, Wellesley; M.A., 1910, Columbia.
Assistant Professor of Literature.

GRADUATE COMMITTEE

J. RAYMOND BRACKETT, Dean.
FRANCIS RAMALEY,
JOHN BURTON PHILLIPS,
SAUL EPSTEEN, Secretary.

GENERAL STATEMENT

ANNOUNCEMENT

The University of Colorado offers graduate instruction to those who desire a more liberal education than is afforded by the college or professional course, to those who wish to prepare for the larger duties of citizenship, and to those who wish to become investigators in a special subject. The call in all higher intellectual fields is for a preparation considerably more advanced than the college course. The graduate school of the modern university is the place of professional training for philosophy, languages, literature, science, and the public service; systematic graduate study is invaluable to writers, journalists, teachers, economists, legislators, and special investigators in science and philosophy.

The University of Colorado offers to graduates of colleges and universities the use of its fine library, new laboratories, and advanced courses of study.

Graduate students who meet the requirements for higher degrees, receive personal sympathy in arranging their work, and aid toward securing a start in their chosen career.

ADMISSION

Graduates from any college or scientific school of good standing are admitted upon presentation of diploma and certificate of good character.

Upon entrance, the student confers with the Dean of the Graduate School regarding the selection of a chief subject of study; the minors are elected on consultation with the professor in charge of the major; one minor of at least six hours must be completed in a different department from the major.

Candidates for the degree Doctor of Philosophy must have a reading knowledge of both French and German. Candidates for the degree Master of Arts must have a reading knowledge of French or German, but the professor in charge of the major subject may require both French and German.

GRADUATE COMMITTEE

The Graduate Committee consists of the Dean of the Graduate School, the Secretary, and two other professors. The Dean and the Graduate Committee supervise the election of studies, and, after receiving reports from the professors giving instruction, recommend candidates to the Graduate faculty for degrees.

RESIDENCE

The University of Colorado does not grant credit for work done *in absentia;* but this rule does not apply to graduates of this Institution who are candidates for the degree of Engineer. For a year to count as residence, a student should be located at the University and give his undivided attention to academic work, completing not less than thirty hours.

ADVANCED STANDING

Credit is given for work done in other universities, but at least one full year of residence at the University is required for each higher degree.

RECORD OF SCHOLARSHIP

A book is issued to each graduate student in which the Dean enters the courses he is to take. At the end of each semester the student submits his book to each instructor for signature; then to the Dean for record. On leaving the Institution the book becomes his personal property, and is a sufficient evidence of the scope and character of his work.

FEES AND EXPENSES

There is no tuition fee in the Graduate School; there is a diploma fee of ten dollars. Alumni of other institutions pay a matriculation fee of ten dollars.

INSTRUCTORSHIPS

Students making special investigations have opportunities to study the teaching of the subjects they pursue, and, if they show special ability, may become candidates for instructorships.

CANDIDATES FOR A DEGREE

Master of Arts—A graduate student wishing to become a candidate for the degree Master of Arts should make special application as soon as possible after matriculation.

Doctor of Philosophy—A student entering the University for the first time should work some months, that his ability may be known, before applying for enrollment as a candidate for the degree Doctor of Philosophy.

Applications for candidacy should include a programme of studies leading to the degree, a list of undergraduate work in the same lines, a statement of any original work already accomplished, and an enumeration of honors and degrees.

REQUIREMENTS FOR DEGREES

Candidates for the degree Master of Arts or Doctor of Philosophy must present credits for at least one year's residence at this University, and evidence of having completed a course of study approved by the Dean and Graduate Committee.

Master of Arts—The work required is one full year. Six copies of the Master's thesis or dissertation, printed or typewritten and bound, are to be placed in the University library.

Doctor of Philosophy—The work required is three years of residence, which shall include as a minimum, 5 semesters of 12 hours each and a thesis. The first two years may be spent at other universities in actual residence; or the first two years may be done here and the third spent in the preparation of a thesis at some approved university.

The thesis for the Doctor's degree must show power in original investigation; it is printed and from fifty to one hundred copies placed in the University library for the use of the University.

Students applying credits from other universities should bring letters from their instructors showing quality and amount of work. The final examination covers all subjects presented for the degree, whether done here or elsewhere.

The following degrees are offered to students specially prepared in Engineering:

Master of Science—A candidate for the degree Master of Science must have previously received the degree B.S. in Engineering from this University; or if graduated elsewhere, he must satisfy the Faculty that he possesses equivalent attainments. He must choose a major subject to occupy one-half his time from the graduate courses offered in the line in which he received his Bachelor's

degree. Study and residence for not less than one year and a thesis on an approved subject are required. A year's work includes thirty hours, of which not less than six hours should be given to the thesis.

Civil Engineer, Electrical Engineer, Mechanical Engineer.—The degree of Engineer may be conferred upon a Bachelor of Science of this University who has taken the B.S. degree in the course for which he is a candidate for the higher degree, if he furnish satisfactory evidence that he has pursued further technical studies for at least one year, has presented a satisfactory thesis on an approved engineering topic, and in addition has been employed in professional work in positions of responsibility for at least another year. If the candidate does not reside at the University, his course of study must be approved in advance by the professor in charge of the department; and he must prepare an approved thesis on some engineering topic to be presented together with a detailed account of his professional work, at least one month before the annual commencement at which he expects to take his degree. Candidates must be registered for two years in advance of the commencement at which the degree is to be conferred.

Graduates of other institutions must complete one year of work and residence in this University.

INSTRUCTION

Students admitted to the Graduate School may pursue any course in the College of Liberal Arts, College of Engineering and professional schools for which they are qualified.

The Graduate Faculty does not put hindrances in the way of mature students; almost any reasonable programme of study will be approved if it forms a consistent plan of work or is to be pursued with some definite aim.

But courses will be counted towards a degree only when recommended for that purpose by the professors in charge of such courses.

The courses of study offered especially to graduate students may be grouped as follows:

I. Greek Language and Literature.
II. Latin Language and Literature.
III. Germanic Languages and Literatures.

IV. Romance Languages and Literatures.
V. Literature (in English).
VI. English Language.
VII. Mathematics.
VIII. Civil Engineering.
IX. Electrical Engineering.
X. Mechanical Engineering.
XI. Physics.
XII. Chemistry.
XIII. Biology.
XIV. Geology.
XV. Philosophy.
XVI. Psychology.
XVII. Education.
XVIII. History.
XIX. Law.
XX. Social Science.
XXI. Music.

*DESCRIPTION OF COURSES

I. GREEK LANGUAGE AND LITERATURE

Professor Norlin:—

11. The Greek Pastoral.
With special study of Theocritus.

12. Plato.
Interpretation of the Republic.

13. Thucydides.

14. Lyric Poets, Including Pindar and Bacchylides.

15. Greek Tragic Poets.

For Graduates Only.

22. Aristotle's Politics and Constitution of Athens.

23. History of Greek Comedy.

24. Introduction to Greek Epigraphy.

25. Study of Greek Dialects from Inscriptions.

26. Seminar in Poets of Alexandrian Period.

27. Seminar in Early Greek Philosophy.

28. Seminar in Greek Mythology and Religion.

II. LATIN LANGUAGE AND LITERATURE

Professors Hellems and Derham:—

16. Lucretius.

19. Martial.

22. Suetonius.

24. Advanced Latin Prose.

25. Greek and Roman Archæology.

* The graduate courses, which may be elected by undergraduates also, are listed under the same numbers as in the College of Liberal Arts. The courses for graduates only are described here.

For Graduates Only.

26. Roman Law.
    (1) Gaii Institutiones Juris Civilis. 3 h.
    (2) Elements of Roman Law. 2 h.
27. Roman Administration. 3 h.
    The development of Roman public institutions in their historical sequence.
28. Roman Topography. 2 h.
    The topography of Rome in the historical development of the city.
29. Interpretation of Early Latin. 2 h.
    Selected examples of Early Latin.
30. Epigraphy. 2 h.
    Cagnat's Cours d'Epigraphie Latine; Egbert's Introduction; handling of the Corpus Inscriptionum Latinarum.
31. Latin Morphology. 2 h.
    The subject will be approached from the comparative side.
32. Latin Syntax. 2 h.
    The subject will be treated comparatively.
33. Latin Palæography. 2 h.
    An introduction to the subject.
34. Seminar on Domitian.
    A study of the sources for the life and reign of Domitian; particular stress will be laid on the epigraphical side.
35. Tacitus. 2 h.
    A rapid reading course in the Annals with a consideration of the historical problems raised.
36. Persius. 2 h.
    Interpretation of the text; Stoicism in the early Empire.
37. Roman Provincial Administration.
    Pliny, Letters, book X; selections from Cicero's correspondence.

III. GERMANIC LANGUAGES AND LITERATURES

Professor van Sweringen:—

GERMAN

8. The German Drama of the Nineteenth Century.
11. Gœthe's Faust.

For Graduates Only.

17. The History of German Literature from the Earliest Times to the Time of Klopstock. *First semester.* 3 h.
Lectures; collateral reading; papers.

18. The History of German Literature from the Time of Klopstock to the Present. *Second semester.* 3 h.
Lectures; collateral reading; papers.

19. Old High German. *Two semesters.* 3 h.
Braune's Althochdeutsche Grammatik, and Althochdeutsches Lesebuch.

20. Middle High German. *Two semesters.* 2 h.
Paul's Mittelhochdeutsche Grammatik; reading of Hartman von der Aue's Der Arme Heinrich.

21. Germanic Hero-Sagas. *One semester.* 3 h.
Lectures; recitations; collateral reading.

22. Germanic Mythology. *One semester.* 3 h.
Lectures; recitations; collateral reading.
Primitive Germanic religion, customs and ideals of life, in their relation to German literature.

GOTHIC.

For Graduates Only.

23. Gothic. *One semester.* 3 h.
Phonology and inflections of Gothic; relation of Gothic to German and English; reading of extracts in Braune's Gotische Grammatik.

SCANDINAVIAN.

For Graduates Only.

24. Old Icelandic. *Two semesters.* 3 h.
Phonology and inflection of Old Icelandic, from Noreen's Altisländische and Altnorwegische Grammatik.
Reading of Heusler's Zwei Isländer-Geschichten.

25. The Edda. *Both semesters.* 3 h.
Gering's Edition of Hilderbrand's Edda Lieder.

IV. ROMANCE LANGUAGES AND LITERATURES

Professor Ayer:—

FRENCH.

7-8. History of French Literature.

For Graduates Only.

9. Old French Grammar and Comparative Romance Philology. 2 h.
10. Reading of Old French Texts. 2 h.
Bartsch's Chrestomathie de l'Ancien Francais.
11. Comparative Romance Syntax, on Basis of French. 2 h.

SPANISH.

6. Lope de Vega and Calderon.
7. Advanced Prose Composition.

For Graduates Only.

8. Introduction to Old Spanish.
Lectures and seminar exercises.
Comparative Romance Philology, with special reference to Spanish; Keller's Altspanishches Lesebuch; El Poema del Cid.

ITALIAN.

3. The Life and Works of Dante.
4. Petrarch and Boccacio.

For Graduates Only.

5. Introduction to Old Italian.
Lectures and seminar exercises.
Comparative Romance Philology, with special reference to Italian. Monaci's Crestomazia Italiana dei primi secoli.

V. COMPARATIVE AND ENGLISH LITERATURE

Professor Brackett, Dean Bigelow, Miss Bell, Miss Field. and Mr. Salomon:—

4. Art-Form.
6. Shakespeare.
7. The Great Drama.
11. Tennyson.
15. Comparative Literature.
16. The Epic.
17. World 'Drama.
18. The Short Story.
19. Masterpieces of Fiction from the Earliest Times.

For Graduates Only.

20. The History of English Literature.
Study of selected periods; the Elizabethan period; the age of Milton; the nineteenth century; contemporary authors.

21. Studies in Victorian Literature and Art. *Throughout the year.* 5 h. 1908.
Ruskin and Turner; the Pre-Raphaelite Movement; the Rossettis; Burne-Jones; Holman-Hunt; George Frederick Watts; William Morris; Walter Crane.

22. The Predecessors of Shakespeare. 5 h. 1904.

23. The Renaissance in Europe. 5 h. 1909.

24. Romanticism.

25. The Teaching of Literature. 1911.

26. The History of English Prosody. 1911.
Saintsbury, three volumes.

VI. ENGLISH LANGUAGE

Professor McLucas:—

8-9. Anglo-Saxon.

10. Middle English.

11. Chaucer.

12-13. Shakespeare.

14. Pre-Shakespearean Drama.

VII. MATHEMATICS

Professors DeLong and Epsteen, and Miss Cooper:—

8-9. Differential Calculus.

10. Integral Calculus.

11. Differential Equations.

12. a. Solid Analytic Geometry.
b. Theory of Functions.

14. a. Modern Geometry.

**For Graduates Only.*

EITHER SEMESTER.

(Credits and hours to be arranged.)

15. Advanced Analytic Geometry.
Prerequisite: courses 7 and 8.

* Not more than two of the courses, 15-20, inclusive, will be offered in any one semester.

16. Advanced Trigonometry.
    Prerequisite: courses 3 and 4.
17. Linear Algebra.
18. Continuous Groups.
    Prerequisite: courses 10 and 11.
19. Applied Higher Mathematics.
    Prerequisite: courses 11 and 12a.
20. Seminar.

VIII. CIVIL ENGINEERING

Professor Ketchum and Assistant Professor Williams:—

For Graduates Only.

101. Railway Location and Construction.
102. Yards and Terminals.
103. Signal Engineering.
104. Railway Operation and Management.
105. Tunnels and Canals.
110. Advanced Bridge Design.
111. Swing and Movable Bridges.
112. Metallic Arches.
113. Indeterminate Structures.
114. Steel Office Building Construction.
115. Steel Mine and Mill Structures.
120. Reinforced Concrete Construction.
130. General Water Works Construction and Management.
131. Tanks, Standpipes and Reservoirs.
140. Sewage Purification and Disposal Works.
141. General Sewerage Design and Construction.
150. Irrigation Engineering Structures.
151. Irrigation Engineering Studies.
152. Dams and Reservoirs for Irrigation.
160. Hydraulics.
161. Hydraulics of Rivers, Weirs and Sluices.

IX. ELECTRICAL ENGINEERING

Professor Evans and Assistant Professor Jenkins:—

For Graduates Only.

101. Theory of Alternating Currents.
102. Analysis and Design of Alternating Current Apparatus.

103. Analysis and Design of Direct Current Apparatus.
104. Switchboard Design and Construction.
105. The Testing of Electrical Machinery.
106. Electrical Engineering Research.
107. Telephones and Telegraph.
108. Electrical Transmission of Power.
109. Electric Light and Power Plants.
110. Electro-Metallurgical Industries.
111. Advanced Electrical Engineering Laboratory.

X. MECHANICAL ENGINEERING

Professor Hunter:—

For Graduates Only.

101. Advanced Machine Design.
102. Graphics and Kinematics.
103. Advanced Steam Engineering.
104. Experimental Engineering.
105. Pneumatics.
106. Railway Mechanical Engineering.
107. Mechanical Refrigeration.

*XI. PHYSICS

Professor Lester:—

6. Theoretical Mechanics—Statics.
7. Theoretical Mechanics—Dynamics.
8. Theory of Electricity and Magnetism.
9. Electrical Measurements. Credit according to the amount and nature of the work.

   Prerequisite: courses 1, 2, 3, 4, and calculus.
10. Theory of Electricity and Magnetism. Hours to be arranged.
11-12. Introduction to Theoretical Physics. Hours to be arranged.

   Prerequisite: courses 1, 2, 6, 7, and calculus.
13-14. Advanced Experimental Physics.

   Prerequisite: courses 1, 2, 3, 4, and calculus; also to be taken with or to follow course 11-12.

* Each course is given annually with the exception of 10 and 12, which are given when there is sufficient demand.

15. Theory of Electrons.
Prerequisite: courses 1, 2, 3, 4, 6, 7, and calculus.

17. Vector Analysis. *Throughout the year.* 2 h.

For Graduates Only.

18. Radio-Activity. *First semester.* 1 h. *Second semester.* 2 h.
A reading course embracing the discovery of radio-activity, the chemical and physical properties of the radio-active substances, and the recent investigations concerning them. This is supplemented, in the second semester, by laboratory work on the methods of detecting and measuring radio-activity.

19. Advanced Mechanics. *Both semesters.* 2 or 3 h.
This course is designed primarily for students intending to specialize in the physical and mathematical sciences. Special emphasis is laid upon general principles. Among the subjects considered are: force, moment, impulse and energy, equations; damped and forced vibrations; central forces; d'Alembert's principle; elasticity; Green's theorem and the theory of potential; Lagrange's equations; principle of least action.
Prerequisite: course 6 and advanced calculus, differential equations.

Note—Special courses may be arranged for those who are prepared to take them.

XII. CHEMISTRY

Professor Ekeley, Mr. Curtis, Dr. Hoogendijk and Mr. Poe.

3-4. Qualitative Analysis.

5a and 5b. Quantitative Analysis.
Gravimetric.

6a and 6b. Quantitative Analysis.
Volumetric.

7. Analysis of Iron and Steel.

8. Sanitary Water Analysis.

9. Mineral Water Analysis.

10. Ore Analysis.

11. Gas Analysis.

12. Organic Chemistry.
Lectures.

14. Organic Laboratory Preparations.

15. Ultimate Analysis of Organic Compounds.
16. Food Analysis.
17. Physical Chemistry.
    Lectures.
18. Physico-Chemical Laboratory Methods.
19. Electrochemistry.
    Lectures.
20. Electrochemical Analysis.
21. Laboratory Practice in Electrochemistry.
22. Physiological Chemistry.
    Lectures.
23. Physiological Chemistry.
    Laboratory.
24. Industrial Chemistry.

Note.—Candidates for the Master's degree, taking chemistry as a major, must have completed courses Nos. 1, 2, 3, 4, 5a, 5b, 6a, 6b, 7, 10, 12, 14, 17, 18, 19, 21. Courses from No. 6 on may be counted toward the thirty-hour requirement, in case they have not already been counted toward the bachelor's degree; in such cases special courses in chemistry may be arranged for.

XIII. BIOLOGY

BOTANY.

Professor Ramaley:—

For Graduates Only.

10. Plant Ecology.
    In this course the student becomes acquainted with the principles of ecological plant geography and the physiological facts which are necessary for an understanding of those principles. In particular, he studies the plant geography of Colorado and of North America.
    Research work in ecology is provided at the mountain laboratory at Tolland, Colorado. Prospective students should consult the Summer Session Announcement.
11. Plant Anatomy.
    A general account of the history of plant anatomy and the recent developments of the subject with practical laboratory investigation of special groups.

12. Algology.

A study of the classification of algæ, both fresh-water and marine; examination of a large series of specimens.

ZOOLOGY.

Professors Cockerell and Ramaley:—

For Graduates Only.

11. Embryology and Histology of Vertebrates.

A part of the work will be done with the regular undergraduate class in this subject but special topics will be assigned to graduate students.

12. Special Problems.

Palæo-entomology, Ichthyology, Taxonomy of Hymenoptera, Coccidæ (scale insects), and others as opportunity offers.

XIV. GEOLOGY AND MINERALOGY

Professors George and Henderson, and Assistant Professor Crawford:—

I. GEOLOGY AND PHYSIOGRAPHY.

7-8. Economic Geology.

9-10. Advanced Geology.

11-12. Geology of Colorado.

13-14. Advanced Field Geology.

15. Advanced Physiography.

16. Geology Culture Course.

17-18. Paleontology.

For Graduates Only.

19-20. Research Geology. *One or both semesters*

The work will be chiefly individual, and will depend largely on the preparation of the student. The vicinity of Boulder, and the state as a whole, offer a wide range of problems for research. The credit allowed will depend upon the time given to the work and the character of the results obtained.

Prerequisite: previous training equivalent to courses: 1-2, 7-8, 9-10, 13-14, and Mineralogy 5-6 and 3-4. Mineralogy 9-10 is strongly recommended. One or more of these courses may be taken with the research work.

Note—The establishment of the State Geological Survey gives very exceptional opportunities to a limited number of advanced students in geology.

II. MINERALOGY AND PETROLOGY.

5-6. Advanced Mineralogy.
8. Geological Materials for Industrial Chemistry.
9-10. Petrography.

For Graduates Only.

11-12. Quantitative Mineralogy. *Both semesters.*

Advanced students of geology and mineralogy who are doing independent field work and who have had sufficient training in analytic chemistry will be provided laboratory equipment for the necessary analytic work in connection with the preparation of reports and theses.

XV. PHILOSOPHY

Professor Libby:—

All undergraduate courses are open to candidates for higher degrees. The *thesis-subject* may be chosen from any branch of Philosophy.

For M.A.

For *major*, undergraduate courses, and advanced readings in sources of Philosophy, and in Metaphysics; for *minor*, a thorough knowledge of the history of Philosophy only.

For Ph.D.

For *major*, courses for M.A. major, with further advances in history of Philosophy and in special disciplines. Candidate must be able to read German and French at sight. For *minor*, advanced history of Philosophy only, including special knowledge of two philosophers.

XVI. PSYCHOLOGY

Professors Cole and Thompson:—

2. Comparative Psychology.
3. Advanced Psychology.
4. Pathological Psychology.
5-6. Experimental Psychology.
8. Social Psychology. (Education 15).
9. Child Study.
10. Anatomy of the Central Nervous System.

For Graduates Only.

11. Advanced Experimental Psychology.
Students in this course will be expected to carry on systematic investigations in special problems.

XVII. EDUCATION

Professors Thompson, Cole and Libby:—

9. History of Ancient and Mediæval Education.
10. History of Modern Education.
11-12. Comparative Study of School Systems.
13. General Anthropology.
14. General Ethnology.
15. Social Psychology (Psychology 8).
16. Education and Society.
17. Advanced Practice Teaching.
18. Practicum in Education.

XVIII. HISTORY

Professor Willard:—

9. Modern England.
10. Historical Bibliography.
12. American Colonial History.
13. Civil War and Reconstruction.
14. The Mediæval Church and the Reformation.
15. English Social and Industrial History.
16. The United States. 1787-1803.
17. The Near Eastern Question.
18. Modern Internationalism.
19. Renaissance.

For Graduates Only.

21. England in the Fourteenth Century. *Throughout the year.* 2 h. *Not given in* 1911-1912.
A seminar course on the social, economic, and political history of England during the fourteenth century; intended to teach methods of research in European history to those who desire to specialize in that subject.

XIX. LAW

Professor Fleming:—

Constitutional Law. 4 h.
Sales of Personal Property. 4 h.
Irrigation. 3 h.
Mining Law. 3 h.

Professor Reed:—

Bills and Notes. 5 h.
Private and Municipal Corporations. 5 h.
Domestic Relations. 3 h.

Professor Pease:—

Real Property. 5 h.
Law of Contracts. 5 h.

Mr. Folsom:—

Bailments and Carriers. 2 h.

XX. SOCIAL SCIENCE

Professor Phillips:—

4. Advertising.
5. Principles of Sociology.
6. Problems in Sociology.
7. Theory and Application of Statistics.
8. National Administration.
9. State and Local Government.
10. Politics.
11. Political Parties and Party Problems.
12. City Government in the United States.
13. City Government in Colorado.
14. Consular and Diplomatic Service.
15. History of Commerce.
16. Economic and Commercial Geography.
17. Current Economic Problems.
18. Money and Banking.
19. Transportation.
20. Corporation Finance.
21. Taxation.

22. Theory of Investments (Life Insurance, etc.)
23. Theory and Practice of Accounting.
24. Great Industries.
25. Municipal Ownership and Other City Problems.
26. Business Organization and Scientific Management.

For Graduates Only.

27. History and Criticism of Economic Theories. *First semester.* 12:00. 2 h.

Lectures, reading, reports.

The lectures will deal with the economic ideas of Plato and Aristotle; the influence of the Roman Law; the Canonists; Mercantilists; Physiocrats; Adam Smith; Ricardo; Malthus; John Stuart Mill; the Historical School; Jevons and the Austrian School. The aim is not only to study the content of economic theory, but also to exhibit theory in the light of political and social conditions.

28. Seminar in Economics and Sociology. *Throughout the year.* 2 h.

XXI. MUSIC

Professor Chadwick:—

4. Canon and Fugue.
5. Composition and Orchestration.
6. History of Music.
7. Æsthetics and Philosophy of Music.

COLLEGE OF ENGINEERING

FACULTY

James H. Baker, M.A., LL.D., President.

Milo S. Ketchum, C.E., Dean,
Professor of Civil Engineering.

Herbert S. Evans, E.E.,
Professor of Electrical Engineering.

John A. Hunter, M.E.,
Professor of Mechanical Engineering.

Saul Epsteen, Ph.D.,
Professor of Engineering Mathematics.

Charles C. Ayer, Ph.D.,
Professor of Romance Languages.

John Burton Phillips, Ph.D.,
Professor of Economics and Sociology.

John Bernard Ekeley, Ph.D., Sc.D.,
Professor of Chemistry.

Russell D. George, M.A.,
Professor of Geology.

Oliver C. Lester, Ph.D.,
Professor of Physics.

John S. McLucas, M.A.,
Professor of English.

Grace Fleming van Sweringen, Ph.D.,
Professor of German.

Clough T. Burnett, M.D.,
Professor of Bacteriology.

DAVID R. JENKINS, E.E.,
Assistant Professor of Electrical Engineering.

CLEMENT C. WILLIAMS, C.E.,
Assistant Professor of Civil Engineering.

GUY W. SMITH, B.S. (E.E.), M.S.,
Instructor in Engineering Mathematics.

HARLAND C. WOODS, C.E.,
Instructor in Engineering Drawing.

SIEBELT L. SIMMERING, B.S. (M.E.).,
Instructor in Mechanical Engineering.

WHITNEY C. HUNTINGTON, B.S. (C.E.).,
Instructor in Civil Engineering.

CARL M. DUFF, B.S. (C.E.),
Instructor in Engineering Mathematics.

REX E. EDGECOMB, B.S. (C. E.),
Instructor in Civil Engineering.

CHARLES D. FAWCETT, B.S. (E.E.).
Instructor in Electrical Engineering.

FRANK S. BAUER, B.S. (M.E.),
Instructor in Mechanical Engineering.

HERBERT D. MCCASLIN, B.S. (M.E.),
Instructor in Mechanical Engineering.

MARGARET S. CARHART, M.A.,
Instructor in Engineering English.

HARRY A. CURTIS, B.S. (Ch.E.), M.A.,
Instructor in Chemistry.

WILLIAM R. BRACKETT, B.A.,
Instructor in Physics.

S. GRISWOLD MORLEY, Ph.D.,
Instructor in Romance Languages.

HAROLD E. ROBBINS, M.A.,
Instructor in Physics.

FRANK L. BROWN, B.S. (C.E),
Assistant in Civil Engineering.

WALTER F. MALLORY,
Assistant in Mechanical Engineering.

VICTOR C. MOULTON,
Assistant in Engineering Drawing.

GUY S. NEWKIRK,
Assistant in Engineering Drawing.

RUTH SHELLEDY, B.A.,
Assistant in Engineering German.

STAFF OF THE U. S. GOVERNMENT TIMBER-TESTING STATION.

NORMAN DE W. BETTS, M.E.,
Engineer in Forest Products.

HARRY M. MASON, JR., M.E.,
Engineer in Wood Preservation.

CORNELIUS BARRY,
Laboratory Assistant.

GENERAL STATEMENT

PURPOSE

In accordance with the provisions of the Charter of the University, a School of Applied Science was authorized by the Board of Regents, and established in 1893. The name of the Department was changed to the College of Engineering, September, 1906.

It is the object of the College to provide thorough technological education of the highest grade. To this end there is combined with a broad theoretical training a very considerable amount of practical work in the shops and laboratories, supplemented by visits to large manufacturing establishments and power installations.

Regular courses of study, extending over four years, are offered in Civil, Electrical, Mechanical, and Chemical Engineering.

The work of the first two years of all courses, with a few minor exceptions, is the same. It is aimed in these years to lay a broad foundation for the more specialized work of the last two years. To this end the work is largely theoretical in character, and comprises courses in mathematics, general chemistry and physics, mechanical drawing, languages, and the elements of engineering subjects. Class room and lecture work is supplemented wherever practicable by laboratory courses.

In the last two years the work is more specialized, and the fourth year is almost entirely devoted to technical work in the several branches of Engineering.

REQUIREMENTS FOR ADMISSION

See page 46.

ADMISSION TO ADVANCED STANDING

Students from other institutions will be admitted to any class not later than the first term of the senior year on passing examinations in the subjects given in the preceding years in the College of Engineering, or on presentation of satisfactory certificates, showing

that the required work has been done in other technical schools. A certificate of honorable dismissal will also be required.

Graduates from other colleges will be admitted without examination, and allowed to pursue such courses as their previous work will permit.

By proper election of subjects in the collegiate course, such as sciences, mathematics, and languages, a graduate of the arts department can obtain his engineering degree in two years. Such a course affords a very broad general training, and is to be highly recommended.

DEGREES

Upon the satisfactory completion of the prescribed and elective work in any course, the degree, Bachelor of Science in the course pursued, will be conferred.

As a prerequisite to graduation, each student is required to present a satisfactory thesis on a subject requiring original research work along technical lines, or an extended study of some engineering problem or appliance.

The degree of Master of Science (M.S.) is given upon completion of one year's graduate work in residence after having obtained the degree of Bachelor of Science in Engineering. The year's work requires thirty (30) semester hours' credit, of which at least six (6) hours shall be devoted to a thesis.

The degree of Civil Engineer (C.E.), Electrical Engineer (E.E.), or Mechanical Engineer (M.E.), is given for one year's academic work (30 semester hours' credit in technical subjects, not less than two-thirds of which must be in the same line as the candidate's undergraduate work), and a thesis, after the candidate has had at least one year's responsible charge of engineering work. The academic work for graduates of this Institution need not be done in residence. A candidate must be registered for at least two years before coming up for the degree of Engineer.

For further details of graduate work see the Graduate School.

EQUIPMENT

BUILDINGS.

The College of Engineering occupies the Engineering Building and the Engineering Shops situated at the eastern end of the quad-

rangle. The buildings are well planned for engineering instruction and are devoted entirely to the technical work of the college.

ENGINEERING BUILDING—The basement contains the applied mechanics, timber testing, hydraulic, road materials testing, and cement laboratories.

On the first floor are located the electrical and mechanical engineering laboratories, senior electrical and mechanical engineering drawing rooms, and class rooms.

The second floor is devoted to drawing and instrument rooms for the civil engineering department, general class rooms and the reading room.

The laboratories, class rooms and drawing rooms are commodious and well lighted.

All buildings on the campus are heated and lighted from a central power plant.

ENGINEERING SHOPS—The Shops Building consists of a one-story section containing a foundry forty by forty feet, a forge shop forty by forty feet, and a machine shop forty by eighty feet; and a two-story section containing a wood-bench shop forty by forty feet, and a wood-turning shop forty by forty feet on the first floor, and a freshman drawing room forty by eighty feet on the second floor. The one-story section is lighted by means of a modified saw-tooth roof.

CIVIL ENGINEERING EQUIPMENT.

The Department of Civil Engineering possesses an extensive equipment of surveying instruments of the various standard makes, consisting of engineer's transits, solar attachments, mining transits, compasses, engineer's levels, solar compasses, plane tables, a sextant, barometers, chains and tapes, as well as smaller instruments. For use in surveying field work the department has a 100-foot standard of length, and a triangulation system with permanent monuments and a meridian and base line.

The department has two bridge extensometers, manufactured by the Wissler Instrument Works, together with other necessary equipment for the determination of stresses in bridge trusses due to static and moving loads.

The department has two Leyner rock drills, mounted and equipped for illustrative and testing purposes.

The department also possesses an ample collection of drawings, blue prints, and photographs for use in design. Among the most valuable collections of plans for students' use are a set of detail plans of the A. T. & S. F. R. R. standard plate girder and truss bridges, donated by Mr. A. F. Robinson; and numerous detail plans of structures donated by the American Bridge Company. Blue print frames, an excellent selection of steel T squares, straight edges and protractors, planimeters, scales, slide rules, and other special drawing tools are available to the student for the courses which involve drafting.

CEMENT LABORATORY.

The Cement Laboratory is equipped with a two thousand pound Fairbank's shot machine, a two thousand pound Riehle cement machine, briquette molds, tanks, Gilmore needles, vicat apparatus, sieves, hot water tanks, specific gravity apparatus, slate slabs, sample barrels of cement, and other necessary apparatus.

HYDRAULIC LABORATORY.

The equipment of the Hydraulic Laboratory consists of a tank in the third story of the building, affording a constant head, and in the laboratory, tanks supplied with various shaped notches and orifices for discharge instruments, channels of various shapes, standard orifices and tubes. The laboratory also contains a Venturi meter, water meters, piezometers, current meters, an A Doble 12-inch experimental water wheel equipped for experimental work, Pitot's tubes, a hook gage, platform scales, hose, and various smaller pieces of hydraulic apparatus.

LABORATORY OF APPLIED MECHANICS.

The Laboratory of Applied Mechanics is equipped with a 30,000-pound Olsen testing machine direct connected to an electric motor; a 100,000-pound Olsen testing machine driven by an electric motor; a 200,000-pound Riehle testing machine that will test a 16-foot beam and an 8-foot column, direct connected to an electric motor; extensometers; compressometers; a 50,000-in. lb. Olsen torsion testing machine, direct connected to an electric motor; a flexure machine; a stone saw; and miscellaneous small tools and apparatus necessary for making commercial tests of iron, steel, brick, stone and wood.

The laboratory is equipped with an Olsen brick rattler, and all other equipment necessary for making commercial tests of paving brick. The equipment of the cement laboratory is available for work in testing cements, mortars and concrete.

ROAD MATERIALS TESTING LABORATORY.

The equipment of the road materials testing laboratory consists of a Page impact machine for testing toughness of rock, a Page impact machine for cementation tests, a two cylinder abrasion machine, Deval type, a Dorrey hardness machine, grinding lap, drill press, diamond stone saw, a ball mill and other minor equipment for making commercial tests of road materials.

U. S. GOVERNMENT TIMBER TESTING STATION.

In addition to the above equipment the Laboratory of Applied Mechanics contains the following additional equipment especially designed for the work of the U. S. Government Timber Testing Station: A Greaves & Klusman No. 3 planer driven by an electric motor; a J. A. Fay & Egan No. 77 rip and crosscut saw driven by an electric motor; a drying oven; a three point loader; a photographic dark room with full equipment; and miscellaneous tools. The laboratory has an overhead track and a one-ton hoist for handling heavy timbers and reinforced concrete beams. All apparatus in the laboratory is available for instructional purposes.

ELECTRICAL ENGINEERING LABORATORIES.

The Electrical Engineering Laboratories are well equipped for the study of direct and alternating current apparatus, electrical testing and the investigation of problems concerning the design, installation and operation of electrical apparatus.

The laboratories include in their equipment a 50 H. P. alternating current motor, three phase; a 30 K.W. direct current, compound generator, belted type; a 10 K.W. rotary converter of special design, with six collector rings and arranged for operation as a single phase, two phase or three phase machine, compound wound and equipped with dampners, and all necessary starting and regulating devices; a 7½-K.W. double current generator, 60 cycles A. C. and arranged for operation as a single phase or two phase machine; a 7½-K.W. revolving field alternator, the armature windings of which are

wound in sections, the ends of each section being brought out to suitable terminal blocks. and designed to give single, two, three, or six phase currents; a 10 horse power U. S. shunt generator; two 3 horse power bi-polar machines. for use as direct current motors or generators; a 7½-K.W. three phase induction motor, with three interchangeable rotors, representing the three commercial types, a squirrel cage, internal, and external resistance; a starting resistance and controller for the above induction motor; a 10 horse power alternating current series compensated motor with suitable controller; a twenty-light Brush arc lighting dynamo; a 30-ampere mercury rectifier; a 20 K.W. direct current. compound motor; a two-phase, 1 horse power inductor motor. and several small generators and motors. The electrical equipment of shops and heating system are also available for special tests and investigations. A direct-current test table equipped with lamp bank. switchboard, meters and two three horse power motors comprises a special portable set for laboratory testing and lecture room demonstration. The transformer equipment comprises types of modern transformers of various sizes; two sets of transformers for two to three phase transformation or vice versa; an auto-transformer of special design, giving a wide range of voltages; a twelve-light constant current transformer, and other transformers for special purposes. The photometer room is large and well ventilated. It contains a Reichsanstalt photometer with a 250 centimeter scale, equipped with both Bunsen and Lummer Brodhun screens, and a special integrating arc light photometer. The standards include an amyl acetate lamp with Reichsanstalt certificate and aged incandescent lamps which have been compared with the best available standards. The necessary accessories for exact photometric work, such as lamp holders, spinners, rheostats, etc., are included in the equipment. Cooper Hewitt (Mercury Vapor) lamps, arc lamps of various makes and types, Nernst and other forms of incandescent lamps are used for experimental purposes.

For the use of classes in telephony, there is a complete telephone laboratory equipment, consisting of a number of the different types of subscribers' sets, together with the necessary central office apparatus and protective devices.

For the investigation of high tension and high frequency phenomena, the transformer laboratory has recently been equipped with a 22,000 volt transformer, a large condenser and a number of Tesla coils of special construction.

The department possesses a large equipment of wattmeters, alternating and direct current ammeters and voltmeters of various ranges and representative makes.

The calibrating equipment includes a Kelvin Composite Balance, a Weston millivoltmeter with shunts, and a Weston Laboratory Standard Voltmeter with the regulating devices needed for such purposes.

A great variety of integrating wattmeters are used for experimental purposes and synchronizers, water rheostats, two lamp banks, a transformer bank and other accessories are provided for testing work. Two test tables designed to be easily moved from room to room and provided with individual lamp bank resistance, one three-phase test table, one direct current table, and a three-phase induction coil are also included in the laboratory equipment.

The University power plant affords the students an excellent opportunity for making commercial tests. The equipment consists of a 150 K. W. three-phase slow speed unit; a 75 K.W. three-phase direct connected alternator with belted exciter; a 35 K.W. direct current compound generator, direct connected; a 25 K.W. steam turbine exciter unit; a 35 K.W. motor generator set; and a thoroughly modern ten panel switchboard.

MECHANICAL ENGINEERING LABORATORY.

The Mechanical Laboratory contains the following apparatus for instructing students in practical experimental engineering: Viscosimeters and similar apparatus for testing viscosity and other qualities of lubricating oils; calorimeters for determining dryness and heat of steam; injectors and water meters for measuring water for boiler trials; thermometers and pyrometers for measurement of temperatures; Bunte gas burrettes and chemical reagents for tests of chimney flue gases; anemometers for study of heating and ventilation; a Parr calorimeter and an Emerson bomb; calorimeters for the determination of the value of fuels; indicators, reducing motions and planimeters for indicator tests of engines; hydrometers for determinations of specific gravity of liquids; micrometers and extensometers for fine measurements; gauges and manometers for pressures; a Westinghouse Air Brake outfit; a six by nine Sturtevant engine for indicator work; a Rumsey hydraulic ram; a twenty inch centrifugal pump; a three by two by three and

one-half Duplex steam pump; a four by two by six Cameron pump; a five by three by eight Davidson pump; an eight horse power gas engine; a Wheeler surface condenser, capacity 2,500 pounds of steam per hour. The University power plant and heating system, consisting of four boilers of 600 horse power capacity, a 225 horse power Murry corliss engine, a 125 horse power Chuce engine, a Leyner air compressor, capacity 200 cubic feet per minute; a 50 horse power Harrisburg engine, several blowers and pumps furnish opportunities close at hand for efficiency tests of boilers with different fuels and of the engines at varying loads.

WORKSHOP EQUIPMENT.

The forge room occupies a space forty by forty feet. The forge equipment consists of the latest type of Buffalo down-draft forges, each with anvil, providing accommodations for twenty students at each session, and also accessory tools for forging, welding and tool dressing.

The foundry occupies a room forty by forty feet, and contains a Newton cupola furnace, capable of melting two tons of iron per hour, ladles, flasks and all necessary small tools and a stock of patterns.

The forges and cupola are served by three centrifugal fans, which are operated by a ten horse power electric motor.

The machine shop occupies a room forty by eighty feet, and is equipped with iron workers' benches; a large Davis & Eagan planer; a Cincinnati milling machine No. 1½; a power hack saw; a Read speed lathe; a Barnes drill press; a Barnes wet emery grinder; a grindstone; a fourteen inch Lodge & Shapley engine lathe; a fourteen-inch Putnam engine lathe; an eighteen-inch Davis & Eagan engine lathe; an eighteen-inch Putnam engine lathe; and an eighteen-inch Le Blond engine lathe. In one end of the shop is a large tool room, containing a good assortment of small tools and instruments of precision.

The wood shops occupy two rooms on the first floor, each forty by forty feet; each shop has its own tool room, and is well equipped with benches and speed lathes for fitting and turning work.

GENERAL ENGINEERING DRAWING.

A large well-lighted room, forty by eighty feet in the Engineering Shops is equipped for courses in Drawing and Descriptive Geom-

etry. It is provided with convenient desks and drawers. The apparatus for instruction and practice consists of over one hundred models, two folding plane frames of special design, a pantograph, a universal drafting machine and numerous special drawing instruments. Besides the usual apparatus of frames, bath, and dark room for sun blue printing, the department has an electric blue printing machine. This machine is of the vertical cylinder type with clock mechanism for lowering the lamp in the cylinder. Its capacity is two prints, size forty-two by forty-four inches, at one exposure. A very serviceable appliance for cutting paper and cloth from rolls consists of a specially designed table. It is provided with rectilinear graduations, and a box at one end for inclosing the roll when the piece to be used has been cut off.

ENGINEERING COURSES

CIVIL ENGINEERING

The work in this department is designed to furnish a thorough course of theoretical instruction, accompanied by practice in the various lines of Civil Engineering. While the course is made practical by giving the student a large amount of practice in the field, the drafting and computing room, and the laboratory, the main object is the development of the mental faculties and judgment of the student.

The general studies and surveying of the first two years lead up to courses in theoretical and applied mechanics, railroads, roads and pavements, hydraulics, graphic statics and engines in the junior year, followed in the senior year by courses in bridge design, design of mill buildings and bins, water supply, sewers, masonry construction, reinforced concrete construction, tunneling and irrigation engineering.

Besides instruction in strictly engineering subjects, courses are given in language, economics, rhetoric, geology, bacteriology, astronomy, and the law of contracts.

Special stress is placed on the field and laboratory work as an aid to the thorough understanding of the theoretical courses. The thesis in the senior year is intended to give the student an opportunity to work out a problem on his own resources and to teach him to be self-reliant.

Numerous inspection trips are made during the junior and senior years, to give the students an opportunity to get in touch with the practical side of engineering work.

ELECTRICAL ENGINEERING

It is the aim of the Department of Electrical Engineering to provide thorough thecretical and practical training for those desirous of engaging in the various applications of electricity to the arts.

Electrical engineering work proper begins in the junior year with courses in electricity and magnetism, theory and method of electrical measurements with direct applications to the theory, design and operation of continuous current apparatus. The theoretical work in alternating currents is begun in the second semester of this year.

The senior year is largely devoted to a study of the design and operation of alternating current apparatus, such as generators, transformers, synchronous and induction motors, rotary converters and transformers; distribution and transmission, electric traction and power plant construction and operation, lighting and metering; the telephone and telegraph, and other applications of electricity to the arts. The design of apparatus is studied by lectures and solution of problems in the drawing room.

Particular attention is given throughout to the proper correlation of class-room study to laboratory work; to this end courses are given in the testing and handling of the various types of direct and alternating current machinery.

In connection with the work in lighting and illumination, complete tests are made of the various types of electric lamps.

Frequent inspection trips are made to the numerous large power plants in the vicinity, and every opportunity is taken to acquaint the student with the engineering problems of his profession. A senior thesis required for graduation, proves most valuable in developing the students' originality.

MECHANICAL ENGINEERING

This course is intended to train students along the broad lines of Mechanical Engineering.

In the second year the students are given practical instruction in elementary studies of the kinematics of machinery and of machine design.

In the junior and senior years, the course becomes more strongly differentiated from other engineering courses, and assumes its professional aspect. It includes the theory of machine design, valve-gear movements, applied mechanics of both building structures and moving machinery; thermodynamics, including the study of steam, gasoline and refrigerator engines; the theory of direct

current electricity, and practical instruction in designing specific machines and power plants; shop-work; thorough instruction in the electrical and mechanical laboratories, in efficiency tests of engines, boilers, motors, blowers, pumps, calorimeters, injectors, etc., as well as general tests of boiler feed waters, lubricating oils, cements, flue gases, steam, fuels, steel and iron. Students will also be given instruction in conducting practical duty trials of power plants. The University heating plant is available for this at all times. In the second semester of the senior year, each student is expected to devote considerable time to research in preparing a graduation thesis on some original subject.

CHEMICAL ENGINEERING

The great development in the United States during the last decade, of chemical and metallurgical industries, such as the manufacture of alkalies, fertilizers, beet sugar, Portland cement, by-products from coal and petroleum, acids from sulphide ores, plate glass, pottery, etc., where a combined knowledge of mechanical engineering and chemistry is needed for competent supervision, has suggested the inauguration of this course. The course in Chemical Engineering is designed to give a major in chemistry and to give fundamental training in engineering. Students taking this course pursue courses in chemistry, physics, mathematics, mechanics and surveying for the first two years; in the junior and senior years, they are given special instruction in designing chemical machinery and in chemical analysis of fuels, gases, steel and iron, electro-metallurgy, etc.

REQUIREMENTS FOR DEGREE OF BACHELOR OF SCIENCE IN ENGINEERING

CIVIL ENGINEERING

FRESHMAN YEAR

FIRST SEMESTER			SECOND SEMESTER		
Algebra	(Eng. Math. 1)*	3	Anal. Geometry	(Eng. Math. 3)	5
Trigonometry	(Eng. Math. 2)	2	Chemistry Lect.	(Chem. 1)	3
Chemistry Lect.	(Chem. 1)	3	Chemistry Lab.	(Chem. 2)	2
Chemistry Lab.	(Chem. 2)	2	German	(Eng. Lang. 4)	
German	(Eng. Lang. 3)		French	(Eng. Lang. 6)	
French	(Eng. Lang. 5)		or Spanish	(Eng. Lang. 8)	3
or Spanish	(Eng. Lang. 7)	3	Rhetoric	(Eng. Lang. 2)	2
Rhetoric	(Eng. Lang. 1)	2	Descript. Geom.	(Draw. 3)	3
Drawing	(Draw. 1)	3			
		18			18

SOPHOMORE YEAR

FIRST SEMESTER			SECOND SEMESTER		
Diff. Calculus	(Eng. Math. 4)	5	Int. Calculus	(Eng. Math. 5)	5
Physics	(Phys. 1 and 3)	5	Physics	(Phys. 2 and 4)	5
Economics	(Econ. 3)	3	Technical Mech.	(C. E. 5a)	2
Surveying	(C. E. 1)	4	Top. Surveying	(C. E. 2)	4
Roads and Pavements	(C. E. 11)	1	R. R. Curves	(C. E. 3)	1
			Engineering Materials	(C. E. 18)	1
		18			18

* These references are to the description of courses in the College of Liberal Arts or to the description of courses in the College of Engineering.

JUNIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Technical Mech.	(C. E. 5b)	3	Hydraulics	(C. E. 7)	2
Applied Mech.	(C. E. 6)	3	Hydraulic Lab.	(C. E. 21)	1
Industrial Electricity	(E. E. 9)	2	App. Mech. Lab.	(C. E. 22)	1
Geology	(Geol. 6)	3	Least Squares	(Eng. Math. 6)	2
Railroads	(C. E. 4)	5	Steam Engines	(M. E. 3)	2
Bacteriology	(C. E. 13a)	2	Geology	(Geol. 6)	3
			Algebraic and Graphic Statics	(C. E. 8)	3
			Structural Details	(C. E. 30)	2
			Astronomy	(Phys. 5)	2
		18			18

SENIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Bridge Analysis	(C. E. 10)	3	Bridge Design	(C. E. 31)	3
Steel Mill Bldgs.	(C. E. 12)	3	Higher Structures	(C. E. 16)	3
Water Supply	(C. E. 13)	3	Engineering Contracts and Specifications	(C. E. 17)	2
Reinforced Concrete Structures	(C. E. 19)	2	Irrigation Eng.	(C. E. 15)	2
Masonry Const.	(C. E. 9)	5	Sewerage	(C. E. 14)	2
Water Power Engineering	(C. E. 20)	2	C. E. Seminar	(C. E. 34)	1
			Thesis		3
		18			16

ELECTRICAL ENGINEERING

FRESHMAN YEAR

FIRST SEMESTER			SECOND SEMESTER		
Algebra	(Eng. Math. 1)	3	Anal. Geometry	(Eng. Math. 3)	5
Trigonometry	(Eng. Math. 2)	2			
Chemistry Lect.	(Chem. 1)	3	Chemistry Lect.	(Chem. 1)	3
Chemistry Lab.	(Chem. 2)	2	Chemistry Lab.	(Chem. 2)	2
German	(Eng. Lang. 3)		German	(Eng. Lang. 4)	
French	(Eng. Lang. 5)		French	(Eng. Lang. 6)	
or Spanish	(Eng. Lang. 7)	3	or Spanish	(Eng. Lang. 8)	3
Rhetoric	(Eng. Lang. 1)	2	Rhetoric	(Eng. Lang. 2)	2
Drawing	(Draw. 1)	3	Descript. Geom.	(Draw. 3)	3
		18			18

SOPHOMORE YEAR

FIRST SEMESTER			SECOND SEMESTER		
Diff. Calculus	(Eng. Math. 4)	5	Int. Calculus	(Eng. Math. 5)	5
Physics	(Phys. 1 and 3)	5	Physics	(Phys. 2 and 4)	5
Forging	(Shop 2)	2	Machine Shop and Foundry	(Shop 6)	3
Wood Shop and Pattern Making	(Shop 1)	3	Mach. Drawing	(M. E. 31)	2
Kinematics	(M. E. 1)	2	Engineering Materials	(C. E. 18)	1
Mach. Drawing	(M. E. 30)	1	Mechanics	(Phys. 6)	2
		18			18

JUNIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Mechanics	(Phys. 7)	3	Applied Mech.	(C. E. 6)	3
Steam Engines and Boilers	(M. E. 2)	4	App. Mech. Lab.	(C. E. 22)	1
Dyn. Elec. Mach.	(E. E. 1a)	3	Economics	(Econ. 3)	3
Illumination and Photometry	(E. E. 8)	2	Thermodynamics	(M. E. 5)	2
Theory Elec. and Mag.	(Phys. 8)	4	Dyn. Elec. Mach.	(E. E. 2)	3
Elec. Meas.	(Phys. 9)	2	Pri. and Sec. Bat.	(E. E. 11)	1
			Mach. Design	(M. E. 32)	2
			D. C. Lab.	(E.E. 21)	2
			Mech. Lab.	(M. E. 21)	1
		18			18

SENIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Theory of Alt. Currents	(E. E. 3)	4	A. C. Mach.	(E. E. 4)	3
A. C. Lab.	(E. E. 22)	3	Surveying	(C. E. 32)	2
Thermodynamics	(M. E. 7)	2	Engineering Contracts and Specifications	(C. E. 17)	2
Hydraulics	(C. E. 7)	2	Elec. Trac.	(E. E. 7)	2
Telephony and Telegraphy	(E. E. 5)	2	Transmission and Distribution	(E. E. 6)	2
E. E. Design	(E. E. 31)	2	E. E. Design	(E.E. 32)	2
Steam. Eng. Lab.	(M. E. 22)	2	Thesis		3
E. E. Seminar	(E. E. 12)	1			
		18			16

MECHANICAL ENGINEERING

FRESHMAN YEAR

FIRST SEMESTER			SECOND SEMESTER		
Algebra	(Eng. Math. 1)	3	Anal. Geometry	(Eng. Math. 3)	5
Trigonometry	(Eng. Math. 2)	2			
Chemistry Lect.	(Chem. 1)	3	Chemistry Lect.	(Chem. 1)	3
Chemistry Lab.	(Chem. 2)	2	Chemistry Lab.	(Chem. 2)	2
German	(Eng. Lang. 3)		German	(Eng. Lang. 4)	
French	(Eng. Lang. 5)		French	(Eng. Lang. 6)	
or Spanish	(Eng. Lang. 7)	3	or Spanish	(Eng. Lang. 8)	3
Rhetoric	(Eng. Lang. 1)	2	Rhetoric	(Eng. Lang. 2)	2
Drawing	(Draw. 1)	3	Descript. Geom.	(Draw. 3)	3
		18			18

SOPHOMORE YEAR

FIRST SEMESTER			SECOND SEMESTER		
Diff. Calculus	(Eng. Math. 4)	5	Int. Calculus	(Eng. Math. 5)	5
Physics	(Phys. 1 and 3)	5	Physics	(Phys. 2 and 4)	5
Wood Shop and Pattern Making	(Shop 1)	3	Foundry	(Shop 4)	2
Forging	(Shop 2)	2	Pattern Making	(Shop 3)	1
Kinematics	(M. E. 1)	2	Mach. Drawing	(M. E. 31)	2
Mach. Drawing	(M. E. 30)	1	Technical Mech.	(C. E. 5a)	2
			Engineering Materials	(C. E. 18)	1
		18			18

JUNIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Technical Mech.	(C. E. 5b)	3	Hydraulics	(C. E. 7)	2
Applied Mechanics	(C. E. 6)	3	App. Mech. Lab.	(C. E. 22)	1
Steam Engines and Boilers	(M. E. 2)	4	Thermodynamics	(M. E. 5)	2
Dyn. Elec. Mach.	(E. E. 1b)	2	Electrical Mach.	(E. E. 10)	2
Mach. Design	(M. E. 32)	3	E. E. Lab.	(E. E. 24)	2
Machine Shop	(Shop 5)	3	Economics	(Econ. 3)	3
			Mach. Design	(M. E. 33)	3
			Mech. Lab.	(M. E. 21)	1
			Heat and Vent.	(M. E. 6)	2
		18			18

SENIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Thermodynamics	(M. E. 7)	2	Steam Turbines	(M. E. 14)	2
Steam Eng. Design	(M. E. 34)	4	Engineering Contracts and Specifications	(C. E. 17)	2
Gas Engines	(M. E. 8)	1	Power Plant Design	(M. E. 35)	2
Steam Eng. Lab.	(M. E. 22)	2	M. E. Lab.	(M. E. 23)	2
Hydraulic Mach.	(M. E. 9)	2	Railway Mech. Engineering	(M. E. 15)	2
Valve Gears	(M. E. 11)	1	Compressed Air	(M. E. 16)	1
M. E. Seminar and Problems	(M. E. 12)	2	Surveying	(C. E. 32)	2
Shop Economics	(M. E. 10)	2	Thesis		3
Structural Engineering	(C. E. 33)	2			
		18			16

CHEMICAL ENGINEERING

FRESHMAN YEAR

FIRST SEMESTER			SECOND SEMESTER		
Algebra	(Eng. Math. 1)	3	Anal. Geometry	(Eng. Math. 3)	5
Trigonometry	(Eng. Math. 2)	2	Chemistry Lect.	(Chem. 1)	3
Chemistry Lect.	(Chem. 1)	3	Qual. Analysis	(Chem. 4)	2
Qual. Analysis	(Chem. 3)	2	German	(Eng. Lang. 4)	
German	(Eng. Lang. 3)		French	(Eng. Lang. 6)	
French	(Eng. Lang. 5)		or Spanish	(Eng. Lang. 8)	3
or Spanish	(Eng. Lang. 7)	3	Rhetoric	(Eng. Lang. 2)	2
Rhetoric	(Eng. Lang. 1)	2	Descript. Geom.	(Draw. 3)	3
Drawing	(Draw. 1)	3			
		18			18

SOPHOMORE YEAR

FIRST SEMESTER.			SECOND SEMISTER		
Diff. Calculus	(Eng. Math. 4)	5	Int. Calculus	(Eng. Math. 5)	5
Physics	(Phys. 1 and 3)	5	Physics	(Phys. 2 and 4)	5
Quant. Analysis	(Chem. 5a and 5b)	5	Quant. Analysis	(Chem. 6a and 6b)	2
Kinematics	(M. E. 1)	2	Technical Mech.	(C.E. 5a)	2
Mach. Drawing	(M. E. 30)	1	Surveying	(C. E. 32)	2
			Mach. Drawing	(M. E. 31)	2
		18			18

JUNIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Technical Mech.	(C. E. 5b)	3	Hydraulics	(C. E. 7)	2
Steam Engines and Boilers	(M. E. 2)	4	Applied Mech.	(C. E. 6)	3
Organic Chem. Lect.	(Chem. 12)	4	App. Mech. Lab.	(C. E. 22)	1
Phys. Chem. Lect.	(Chem. 17)	3	Thermodynamics	(M. E. 5)	2
Mach. Design	(M. E. 32)	4	Mech. Lab. Including Gas Analysis		2
			Organic Preparations	(Chem. 14)	3
			Electro-Chem. Lect.	(Chem. 19)	2
			Economics	(Econ. 3)	3
		18			18

SENIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Thermodynamics	(M. E. 7)	2	Electrical Mach.	(E. E. 10)	2
Steam Engine Lab.	(M. E. 22)	2	M. E. Lab.	(M. E. 23)	1
Dyn. Elec. Mach.	(E. E. 1b)	2	E. E. Lab.	(E. E. 24)	2
Structural Eng.	(C. E. 33)	2	Industrial Chem.	(Chem. 24)	2
Gas Engines	(M. E. 8)	1	Ore Analysis	(Chem. 10)	3
Physical and Electro-Chem. Lab.	(Chem. 18 and 21)	2	Economic Geol.	(Geol. 8)	3
Economic Geol.	(Geol. 7)	3	Engineering Contracts and Specifications	(C. E. 17)	2
Assaying	(Min. 7)	2	Thesis		1
Thesis		2			
		18			16

DESCRIPTION OF COURSES OF STUDY

CIVIL ENGINEERING

1. Surveying. *First semester.* 4 h.

Instruction is given in the theory of surveying and in the theory, use, and adjustment of the compass, level, transit, plane table and sextant. The field work includes pacing and chaining surveys; compass and transit traverses; measurement of angles by repetition; differential, profile, and contour leveling; traverses with the plane-table, etc. Maps and reports are required. Considerable time is given to a study of U. S. Land Survey methods, and to court decisions relating to relocation of corners, lines and boundaries.

Text-books: Pence and Ketchum's Surveying Manual; Allen's Field and Office Tables.

Prerequisite: Eng. Math. 1 and 2, and Drawing 1.

2. Topographic Surveying. *Second semester.* 4 h.

In this course the theory and use of the stadia, the aneroid barometer, base line apparatus, and other instruments used in topographic surveys are studied, and the different methods of making topographic surveys are discussed. A complete topographic survey based on a carefully designed triangulation system is made; the angles are measured by repetition, and base lines are measured with precision. The calculations are made and a map is drawn. A survey is made of a city block, and complete surveys are made of a city street and a mining claim. Considerable time is devoted to topographic drawing.

Text-books: Pence and Ketchum's Surveying Manual; Wilson's Topographic Surveying; and Notes by the Department.

Prerequisite: C. E. 1.

3. Railroad Curves. *Second semester.* 1 h.

A study is made of simple and compound curves. Instruction consists of recitations, problems, and field locations.

Text-books: Allen's Railroad Curves and Earthwork.

Prerequisite: C. E. 1, and to be taken with C. E. 2.

4. Railroad Engineering. *First semester.* 5 h.

Instruction in Railroad Engineering consists of field practice, office and class-room work. Field practice consists of the complete location of a line of railroad, including reconnaissance, preliminary, paper location, final location, and cross-sectioning. In the office the quantities are calculated and profiles and a complete map are drawn. In the class-room a detailed study is made of the principles of economic location and construction, maintenance of way, and railway structures and appliances.

Text-books: Allen's Railroad Curves and Earthwork, Webb's Economics of Railroad Construction; Tratman's Track and Track Work; Talbot's Railway Transition Spiral.

Prerequisite: C. E. 1, 2, and 3.

5a. Technical Mechanics. *Second semester.* 2 h.

The mechanics of engineering rather than of astronomy and physics is here considered. Particular attention is given to developing and fixing fundamental concepts of equilibrium and motion as applied to engineering problems. Both algebraic and graphic methods of the calculation of problems are considered. This course is followed in the first semester of the junior year by Technical Mechanics 5b.

Text-book: Maurer's Technical Mechanics.

Prerequisite: Eng. Math. 4, and registration in Eng. Math. 5.

5b. Technical Mechanics. *First semester.* 3 h.

A continuation of C. E. 5a.

Text-book: Maurer's Technical Mechanics.

Prerequisite: Eng. Math. 5, and C. E. 5a.

6. Applied Mechanics. *First and second semesters.* 3 h.

Recitations, problems, and lectures.

The following subjects are taken up: elasticity of materials; stress and strain; working stresses; resistance of pipes and

riveted joints; bending moment; resisting moment; shear; elastic curve of beams; torsion; internal stress; fatigue of metals, etc. Some time is given to the quality and requirements of engineering materials.

Text-book: Merriman's Mechanics of Materials.

Prerequisite: Eng. Math. 4 and 5, and Physics 6 or C. E. 5.

7. Hydraulics. *First and second semesters.* 2 h.

Recitations, problems, and lectures.

The following subjects are taken up: weight and pressure of water; head; center of pressure; velocity and discharge through orifices, tubes, nozzles, pipes, hose, weirs, conduits, canals, rivers; meters and measurements; motors, turbines, and water wheels; water power.

Text-book: Hoskin's Hydraulics.

Prerequisite: Eng. Math. 4 and 5, and Physics 6 or C. E. 5, and C. E. 6.

8. Algebraic and Graphic Statics. *Second semester.* 3 h.

The elements of statics by algebraic and graphic methods, and stresses in simple roof trusses and bridges.

Text-book: Ketchum's Design of Steel Mill Buildings.

Prerequisite: C. E. 5 and 6.

9. Masonry Construction. *First semester.* 5 h.

A study of cements, concrete, retaining walls, dams, arches, and other masonry and reinforced concrete structures. A complete investigation of a reinforced concrete arch is made, using the elastic theory. Some time is given to testing cements, brick, stone, and reinforced concrete.

Text-books: Taylor and Thompson's Concrete, Plain and Reinforced, and Baker's Masonry Construction.

Prerequisite: C. E. 5, 6, and 8.

10. Bridge Analysis. *First semester.* 3 h.

This course includes the calculations of stresses in bridges and girders loaded with uniform and concentrated loads, by algebraic and graphic methods; stresses in portals, pins, and other details preliminary to bridge design. Each student calculates the stresses in and investigates the efficiencies of the members of a highway bridge.

Text-book: Ketchum's Design of Highway Bridges.

Prerequisite: C. E. 8 and 30.

1. Roads and Pavements. *First semester.* 1 h.

A detailed study of country roads and city pavements, together with a study of road building materials.

Text-book: Baker's Roads and Pavements.

Prerequisite: Registration in C. E. 1.

2. Steel Mill Buildings. *First semester.* 3 h.

A study of steel mill buildings, mine structures, grain elevators, ore bins, retaining walls, etc.

Text-books: Ketchum's Design of Steel Mill Buildings; Ketchum's Design of Walls, Bins, and Grain Elevators.

Prerequisite: C. E. 8 and 30, and to be taken with C. E. 10.

3. Water Supply. *First semester.* 3 h.

The principle features of water works design and construction, including quantity and quality of potable water; choice of supply; the designing of distribution systems, reservoirs, dams and elevated tanks.

Text-book: Turneaure and Russell's Public Water Supplies.

Prerequisite: C. E. 7 and 13a.

3a. Bacteriology. *First semester.* 2 h.

Lectures and laboratory demonstration.

Bacteriological methods and their application in water analysis and sewerage.

Prerequisite: Chemistry 1 and 2, and Physics 1 to 4.

4. Sewerage. *Second semester.* 2 h.

The design and construction of sewerage systems, including separate and combined systems; surveys and plans; determination of size and capacity; construction; and modern methods of sewage disposal.

Text-book: Folwell's Sewerage, and Notes.

Prerequisite: C. E. 7 and 13.

5. Irrigation Engineering. *Second semester.* 2 h.

In this course a study is made of the fundamental principles of irrigation engineering, including the design and construction of reservoirs, dams, flumes, canals, and other irrigation works.

Text-book: Wilson's Irrigation Engineering.

Prerequisite: C. E. 7, 9, and 13.

16. Higher Structures. *Second semester.* 3 h.

The calculation of stresses in swing bridges, suspension bridges, arch bridges, and cantilever bridges, office building frames, and other statically indeterminate structures.

Text-book: Johnson, Bryan and Turneaure's Framed Structures, Part II, and notes.

Prerequisite: C. E. 10 and 12, and to be taken with C. E. 30.

17. Engineering Contracts and Specifications. *Second semester.* 2 h. *For senior students only.*

The law of engineering contracts and specifications. Emphasis is placed on the importance of the clear and definite writing of contracts and specifications, and considerable practice is given the student in the preparation of contracts and specifications.

Text-book: Tucker's Contracts in Engineering.

18. Engineering Materials. *Second semester.* 1 h.

A study is made of the properties and requirements for materials used in engineering construction, the effect of different methods of manufacture upon the quality of the material, and specifications and standard tests for materials.

Prerequisite: Eng. Math. 3 and Physics 1.

19. Reinforced Concrete Structures. *First semester.* 2 h.

A study is made of the theory of reinforced concrete, and the design of reinforced concrete structures.

Text-books: Turneaure and Maurer's Reinforced Concrete; Ketchum's Design of Walls, Bins, and Grain Elevators, and references.

Prerequisite: C. E. 8, and registration in C. E. 9.

20. Water Power Engineering. *First semester.* 2 h.

Stream flow including hydrographs of actual streams; impulse wheels and reaction turbines and the conditions governing their selection; storage and the relation of the reservoir to the power station; economics of power development, its sale and distribution.

Text-book: Mead's Water Power Engineering.

Prerequisite: C. E. 4, 7, and 8, and registration in C. E. 9.

21. Hydraulic Laboratory. *Second semester.* 1 h.

Experiments on flow of water over weirs, through orifices in open channels and pipes; test of pumps; reaction and turbine water wheels, etc.; determination of coefficients of friction in hose and pipes.

Prerequisite: C. E. 5, and registration in C. E. 7.

22. Applied Mechanics Laboratory. *Second semester.* 1 h.

Experiments on strength of steel, wrought and cast iron; shear on rivets; strength of wood; and tensile and compressive strength of Portland cement, brick and building stone.

Prerequisite: to be taken with C. E. 6.

30. Structural Details. *Second semester.* 2 h.

The student traces the shop drawings of a highway bridge; details beams, columns and connections, and calculates the weight of a highway bridge.

Text-book: Ketchum's Design of Highway Bridges.

Prerequisite: to be taken with C. E. 8.

31. Bridge Design. *Second semester.* 3 h.

The detailed design of a railway truss bridge and a railway plate girder, including the making of complete detail drawings and an estimate of weight and cost. A study is made of swing, cantilever, suspension, arch and movable bridges.

Text-books: Merriman and Jacoby's Bridges, Part III, and Notes on Bridge Design.

Prerequisite: C. E. 10.

32. Elementary Surveying. *Second semester.* 2 h.

A brief course in surveying and in the theory and use of the level, transit and other instruments for electrical, mechanical and chemical engineering students. The work covers problems in pacing, chaining, compass and transit surveys, profile and contour leveling, laying out buildings, etc.

Text-book: Pence and Ketchum's Surveying Manual.

Prerequisite: Eng. Math. 1, 2, and 3, Draw. 1, and Physics 1 and 2.

33. Structural Engineering. *First semester.* 2 h.

This course includes the elements of statics by algebraic and graphic methods, the calculation of stresses in roof trusses, and the design of shops and mill buildings.

Text-book: Ketchum's Design of Steel Mill Buildings.
Prerequisite: C. E. 6.

34. C. E. Seminar. *Second semester.* 1 h.
A study is made of technical periodicals and literature.
Prerequisite: C. E. 9, 10, 19, and 13.

35. Mine Structures. 2 h. *Elective.*
A study of the design of head frames, coal tipples, coal washers and breakers, concentrating plants and other mine structures.
Text-book: Ketchum's The Design of Mine Structures.
Prerequisite: C. E. 12, 10 and 19.
For Graduate Courses, see page 148, under "Graduate School."

ELECTRICAL ENGINEERING

1a. Dynamo Electrical Machinery. *First semester.* 3 h.
A study of the theory of electricity and magnetism, and the magnetic properties of iron and steel; the theory, construction and operation of direct current generators and motors.
Text-book: Elements of Electrical Engineering by Franklin and Esty. The work is supplemented by practical problems throughout the course.
Prerequisite: Physics 3 and 4, and to be taken with Physics 6 and 7.

1b. Dynamo Electric Machinery. *First semester.* 2 h.
A study of the theory of electricity and magnetism, and the magnetic properties of iron and steel; the theory, construction and operation of the direct current generators and motors.
Text-book: Elements of Electrical Engineering by Franklin and Esty. The work is supplemented by practical problems throughout the course.
Prerequisite: Physics 3 and 4, and to be taken with C. E. 5b.

2. Dynamo Electrical Machinery. *Second semester.* 3 h.
Continuation of course 1a.

3. Theory of Alternating Currents. *First semester.* 4 h.
A course in the mathematical theory of alternating currents and alternating phenomena and methods of measurements; inductance, capacity, impedance, etc.
Text-book: Franklin and Esty's Alternating Currents.
Prerequisite: E. E. 2, 8, and 21, and Physics 7 and 8.

4. Alternating Current Machinery. *Second semester.* 3 h.

Theory, regulation, testing and operation of various kinds of alternating current apparatus, single and polyphase generators, synchronous and induction motors, rotary converters, etc.

Prerequisite: E. E. 3.

5. Telephony and Telegraphy. *First semester.* 2 h.

The theory of the telephone; land, submarine and wireless telegraphy; telephone and telegraph instruments and systems, and engineering problems.

Text-book: Miller's American Telephone Practice.

Prerequisite: E. E. 1a, 2 and 21, and to be taken with E. E. 3.

6. Transmission and Distribution. *Second semester.* 2 h.

A study of the principles of direct and alternating current distribution for light and power purposes; methods of installation and regulation, illustrated by practical application to specific problems; applications to alternating problems in long distance transmission.

Prerequisite: E. E. 1a, 2, and 3, and to be taken with E. E. 4.

7. Electric Traction. *Second semester.* 2 h.

Principles of the design and installation of electric railway systems, storage battery installations, distribution systems; surface, overhead, underground railways, applications to direct and alternating current systems.

Prerequisite: E. E. 1a, 2 and 3, and to be taken with E. E. 4.

8. Illumination and Photometry. *First semester.* 2 h.

A study of illuminants with respect to their adaptation to interior and exterior lighting and methods of determining the amount, character, and distribution of their light flux. Familiarity with the practice of photometry is gained through laboratory work in connection with this course.

Prerequisite: to be taken with E. E. 1a.

9. Industrial Electricity. *First semester.* 2 h.

A brief course designed especially for students in other departments to acquaint them with the general principles and applications of electricity and electrical machinery.

Prerequisite: Physics 1 to 4.

10. Electrical Machinery. *Second semester.* 2 h.
A course designed especially for students in Mechanical and Chemical Engineering departments, some attention being given near the end of the course to the simpler principles of alternating currents and alternating current machinery.
Prerequisite: E. E. 1b.

11. Primary and Secondary Batteries. *Second semester.* 1 h.
A course devoted primarily to the study of storage batteries, their use, maintenance, and care, and their application to central station work and power distribution.
Prerequisite: E. E. 1a, and to be taken with E. E. 2.

12. E. E. Seminar. *First semester.* 1 h.
A course in the history of Electrical Engineering and the biography of prominent engineers; also reviews of current electrical literature.
Prerequisite: E. E. 1a and 2, and to be taken with E. E. 3.

13. E. E. Seminar. *Second semester.* 1 h.
Continuation of E. E. 12.

21. Direct Current Laboratory. *Second semester.* 2 h.
Experimental study of the characteristics of direct current generators and motors; methods of testing, commercial tests, etc.
Prerequisite: E. E. 1a, and to be taken with E. E. 2.

22. Alternating Current Laboratory. *First semester.* 3 h.
Experimental study of the properties and performance of alternating current generators, motors, transformers, rotary converters; methods of alternating current measurements and commercial tests.
Prerequisite: to be taken with E. E. 3.

24. Electrical Laboratory. *Second semester.* 2 h.
A laboratory course in direct and alternating current machinery, testing and operation.
Prerequisite: E. E. 1b, to be taken with E. E. 10.

31. Electrical Engineering Design. *First semester.* 2 h.
Lectures, problems, drawing.
Principles of design of direct and alternating current apparatus.
Prerequisite: E. E. 1a and 2, and to be taken with E. E. 3.

32. Electrical Engineering Design. *Second semester.* 2 h.
Continuation of course 31.
Prerequisite: E. E. 3, and to be taken with E. E. 4.
For Graduate Courses, see page 148, under "Graduate School."

MECHANICAL ENGINEERING

1. Kinematics. *First semester.* 2 h.
A study of the relative motions of the parts of machines, instant centers, velocities, gearing and wrapping connectors.
Prerequisite: Physics 1 and 3.
Text-book: Dunkerley's Mechanism.

2. Steam Engines and Boilers. *First semester.* 4 h.
Lectures and recitations.
In this course the various types of boilers and engines are studied as well as their construction and operation. Power plant equipment, such as pumps, condensers, piping, pipe covering, steam traps, is taken up.
Text-book: Hutton's Mechanical Engineering of Power Plants.
Prerequisite: Physics 1 to 4.

3. Steam Engines and Boilers. *Second semester.* 2 h.
This is a course in boilers and steam engines for civil engineering students.
Text-book: Hutton's Mechanical Engineering of Power Plants.
Prerequisite: C. E. 5 and 6.

5. Thermodynamics. *Second semester.* 2 h.
Mechanical theory of heat, laws of transformation, perfect gases, saturated and superheated vapors, various cycles, heat and refrigeration engines.
Text-book: Ennis' Applied Thermodynamics.
Prerequisite: Physics 1 to 4, M. E. 3; Physics 6, or C. E. 5.

6. Heating and Ventilation. *Second semester.* 2 h.
A course of lectures is given on this subject in connection with some acceptable text. The different methods of heating and ventilating are investigated with a view to determining their efficiency and economy. The matter of favorable scientific conditions as affected by heating and ventilating is given careful consideration. As a part of the course each student is re-

quired to design a system of heating for a given building by some standard method. He also prepares the necessary specifications and contracts and makes out bills of materials.

Text-book: Carpenter's Heating and Ventilating of Buildings.

Prerequisite: M. E. 1 and 2.

7. Thermodynamics. *First semester.* 2 h.

Lectures, recitations, and problems.

The study of the chemical and calorific qualities of coal, coke, petroleum, natural gas, gasoline, and producer gas; the design of various types of boilers, stokers, grates, feed water heaters, purifiers and economizers, condensers, artificial and natural draught, steam and gas engines, and turbines.

Prerequisite: M. E. 2 and 5.

8. Gas Engines. *First semester.* 1 h.

The purpose of this course is to acquaint the student with the construction and operation of gas engines and producer gas plants.

Text-book: Hutton's Gas Engines.

Prerequisite: M. E. 5.

9. Hydraulic Machinery. *First semester.* 2 h.

This course makes application of the principles of the dynamics of fluids to the various turbines and other water wheels in general use. Cranes, hoists, engines and other appliances using water are discussed. The efficiency of water as compared with steam, electricity or air under different conditions, is considered.

Text-books: Blaine's Hydraulic Machinery; Barr's Pumping Machinery.

Prerequisite: C. E. 7, and M. E. 2.

10. Shop Economics. *First semester.* 2 h.

This course of lectures will cover matters relating to the economical design and management of manufacturing property; the capitalization and organization of companies; the organization of labor; the calculation of cost; transmission of power; and sanitation.

Prerequisite: M. E. 2 and 32.

11. Valve Gears. *First semester.* 1 h.

In this course a theoretical and practical study of valve gears and link motions is made. A thorough investigation is made

of the various kinds of valves and link motions occurring in the different types of engines and pumps.

Text-book: Halsey's Slide Valve Gears.

Prerequisite: M. E. 2.

12. Mechanical Engineering Seminar and Problems. *First semester.* 2 h.

This course takes up the review and study of the literature bearing on mechanical engineering. A series of problems is given for the student to solve and report on, similar to those an engineer would meet in every-day practice.

Prerequisite: M. E. 1, 2, 5 and 6.

14. Steam Turbines. *Second semester.* 2 h.

A study of the principles of the design, installation and management of steam turbine power plants.

Prerequisite: M. E. 2 and 5.

15. Railway Mechanical Engineering. *Second semester.* 2 h.

The purpose of this course is to give familiarity with the working parts and details of locomotives and railway equipment. Special attention will be given to types, properties, weight on driver, etc. The management and repair of locomotives will also be considered. Railway signals, air brakes, car heating and lighting will be treated.

Text-book: McShane's Locomotive Up To Date.

Prerequisite: M. E. 2 and 5.

16. Compressed Air. *Second semester.* 1 h.

A study of air compressors; the transmission of compressed air and its application to pneumatic machinery.

Text-book: Peele's Compressed Air.

Prerequisite: M. E. 5.

21. Mechanical Laboratory. *Second semester.* 1 h.

Experimental work in calibration of planimeters, water meters and gages; tests of dryness and quality of steam; tests of acidity, specific gravity, chilling and flashing points, and viscosity of oils and other lubricating materials; of impurities in boiler feed water; of flow of air with anemometers and draught gages. etc.

Text-book: Carpenter's Experimental Engineering is used as a reference.

Prerequisite: M. E. 2.

22. Steam Engine Laboratory. *First semester.* 2 h.

Tests of boiler flue gases and combustion of fuels; of efficiency of injectors, engines and boilers; commercial tests of heating and power plants.

Prerequisite: M. E. 2 and 5.

23. Mechanical Laboratory. *Second semester.* 2 h.

Advanced work in engine testing involving a study of entropy; tests in heating and ventilating.

Prerequisite: M. E. 7 and 21.

30. Machine Drawing. *First semester.* 1 h.

Lectures and a study of commercial drawings familiarize the student with current practice in Machine Drawing. In addition the most elementary design of machine parts will be taken up.

Prerequisite: registration in M. E. 1.

31. Machine Drawing. *Second semester.* 2 h.

Drawing from models and sketches. Design of machine elements and kinematic drawings of complete machines.

Prerequisite: M. E. 1 and 30, and registration in C. E. 18.

32. Machine Design. *First semester.* 3 h.

Lectures and drawing.

A study of the design of machines from the theoretical and practical standpoints; kinematic relation of parts, strength, rigidity and ease, and cheapness of construction.

Prerequisite: M. E. 1, and C. E. 18.

33. Machine Design. *Second semester.* 3 h.

Each student will design some complete machine. Assembly and detail drawings, bill of material, weights and estimate of cost will be required.

Prerequisite: M. E. 1, 30, 31, 32, and C. E. 5a, 5b, and 6.

34. Steam Engine Design. *First semester.* 4 h.

Recitations and problems.

A study of the practical and theoretical design of simple, compound and triple expansion steam engines.

Prerequisite: M. E. 2, 5 and 33.

35. Power Plant Design. *Second semester.* 2 h.

This course is supplemental to the course on power plant equipment, and is intended to give students actual experience in computing the requirements of power plants, and making construction drawings for the same.

Prerequisite: M. E. 7 and 34.

For Graduate Courses, see page 149, under "Graduate School."

SHOP WORK

In connection with the shopwork a course of reading is mapped out covering the construction, care and use of the tools and machinery with which the student is working. Written quizzes on this work will be required as near the end of each month as the schedule will permit.

1. Woodworking. *First semester. Three periods per week of three hours each.* 3 h.

The use of all ordinary wood-working tools in a series of graded exercises, including the use of speed lathe and turning tools. One-third of time is given to pattern-making.

2. Forging. *First semester. Two periods per week of three hours each.* 2 h.

Occasional lectures and practical work in the forging and welding of iron and steel, tool dressing, tempering, case hardening, and annealing. Each student makes a set of lathe tools and cold chisels to be used later in the machine shop.

3. Pattern Making. *Second semester. One period per week of three hours each.* 1 h.

Making patterns for irons and brass castings with allowances for draft and shrinkage and finish.

Prerequisite: Shop 1.

4. Foundry. *Second semester. Two periods per week of three hours each.* 2 h.

Practical work in the making of moulds and cores; the care and operation of the cupola furnace and the brass furnace; mixing of metals; and the study of the properties of alloys.

5. Machine Shop. *First semester. Three periods per week of three hours each.* 3 h.

Practical work in chipping and filing of iron, steel, brass, and other metals; the working of metals in lathe, planer and drill press; repair of broken machinery and construction of machines and machine parts.

Prerequisite: Shop 1, 2, and 3.

6. Machine Shop and Foundry. *Second semester. Three periods per week of three hours each.* 3 h.

This course is for Electrical Engineering students. The time is divided between machine shop and foundry.

Prerequisite: Shop 1 and 2.

GENERAL ENGINEERING DRAWING

1. Mechanical Drawing. *First semester.* 3 h.

Use of instruments; drawing of geometric figures in isometric, cabinet and orthographic projections. Shading is taught for a two-fold object, viz.: effect on the drawing, and preparation for Descriptive Geometry. Considerable attention is given to lettering.

Text-books: Tracy's Mechanical Drawing, and Reinhardt's Lettering.

2. Mechanical Drawing. *Second semester.* 2 h.

A continuation of Mechanical Drawing for first semester. The course is arranged especially for the Civil Engineering students, and includes sketching from models, taking dimensions for scaled drawings, topographic drawings and mapping.

Text-book: Reinhardt's Technic of Mechanical Drawing.

3. Descriptive Geometry. *Second semester.* 3 h.

The course covers the orthographic projection of points, lines, planes, warped surfaces, etc., in the four angles of projection. Care is exercised to train the student to handle the figures in space rather than on the drawing, at the same time securing correct execution of the drawing.

Text-book: Phillips and Millar's Descriptive Geometry.

Prerequisite: Draw. 1.

4. Free-Hand Drawing. *First semester.* 2 h. *Open to students in all departments.*

A course which includes lectures on the principles of free-hand perspective, practice drawing from models and casts, and assigned reading.

ENGINEERING MATHEMATICS

1. Algebra. *First semester.* 3 h.

On account of the differences in preparation of students entering from widely separated high schools, the course begins with a review of surds and imaginaries, quadratic equations, and logarithms. This review is completed by the time logarithms are needed in trigonometry. After this follows a thorough drill in the algebraic principles that the students will need in analytic geometry, calculus and in the applications to practical engineering. Particular emphasis is placed on graphic methods.

Text-book. Rietz and Crathorne's College Algebra.

2. Trigonometry. *First semester.* 2 h.

This is in the main a conventional course in trigonometry. Considerable attention is given to graphic methods. A knowledge of logarithms is assumed. At the beginning of the semester an examination covering plane trigonometry and the right spherical triangle will be given for those who desire advanced standing in the course.

Text-book: Phillips and Strong's Plane and Spherical Trigonometry.

Tables: Lyman and Goddard's Computation Tables.

3. Analytical Geometry. *Second semester.* 5 h.

The aim is to familiarize the student with analytical methods of investigation. Special emphasis is placed upon the use of algebraic processes as a means of demonstrating geometric properties of loci. In addition to a study of the properties of conics, the transformation of co-ordinates and the general equation of the second degree are taken up. To this are added brief chapters on solid analytic geometry and higher plane curves.

Text-book: Rigg's Analytic Geometry.

Prerequisite: Eng. Math. 1 and 2.

4. Differential Calculus. *First semester.* 5 h.

After the student becomes able to differentiate a given function with ease and accuracy, applications are taken up to prob-

lems in maxima and minima, expansions of functions in series, evaluation of indeterminate forms, radii and centers of curvature and curve tracing.

Text-book: Townsend and Goodenough's Essentials of Calculus.

Prerequisite: Eng. Math. 3.

5. Integral Calculus. *Second semester.* 5 h.

In this course the standard methods of integration are taken up, together with application to areas, volumes, rectification of curves, center of mass, moments of inertia, radius of gyration, and many practical engineering problems. A chapter on the elementary methods of integrating ordinary differential equations is included.

Text-book: Townsend and Goodenough's Essentials of Calculus.

Prerequisite: Eng. Math. 4.

6. Least Squares. *Second semester.* 2 h.

The following topics are among those treated: theory of probability, probability integral, adjustment of observations, precision of observations, direct observations, functions of observed quantities, independent and conditioned observations, probable error, mean error, constant errors, solution of normal equations.

Text-book: Merriman's Method of Least Squares.

Prerequisite: Eng. Math. 5.

7. Differential Equations. *Second semester.* 3 h.

Text-book: Murray's Introductory Course in Differential Equations.

Prerequisite: Eng. Math. 5.

LANGUAGES IN COLLECE OF ENGINEERING

ENGLISH.

1. Engineering Rhetoric. *First semester.* 2 h.

A course in composition and rhetoric arranged with special reference to the needs of engineering students.

2. Engineering Rhetoric. *Second semester.* 2 h.

Continuation of course 1.

Summer reading: In addition to the reading in the above courses students are required to do a prescribed amount of

reading during the summer vacations following the freshman, sophomore, and junior years. The required lists of books are printed in a supplementary pamphlet.

GERMAN.

3. ENGINEERING GERMAN. *First semester.* 3 h.

The course is designed to give a practical, scientific German vocabulary, as well as an ability to read rapidly ordinary scientific material. It will include chemistry, physics, and geology as given in the text-book, with supplementary selections from current engineering magazines.

Text-book: Blochman's Scientific German.

Prerequisite: One year's high-school German.

4. ENGINEERING GERMAN. *Second semester.* 3 h.

A continuation of course 3.

Text-book: Helmholtz's Populäre Vorträge.

Prerequisite: German 3.

FRENCH.

5. ENGINEERING FRENCH. *First semester.* 3 h.

A course in grammar, pronunciation, composition, and sight-reading.

Text-books: Fraser and Squair's French Grammar; Super's French Reader

6. ENGINEERING FRENCH. *Second semester.* 3 h.

A course in reading scientific French.

Text-books: Bowen's First Scientific French Reader; Herdler's Scientific French Reader; Luquiens' Popular Science.

Prerequisite: French 5.

SPANISH.

7. ENGINEERING SPANISH. *First semester.* 3 h.

A course in grammar, pronunciation, composition, and sight-reading.

Text-book: Giese's First Spanish Book and Reader.

8. Engineering Spanish. *Second semester.* 3 h.

A continuation of course 7 covering prose composition, modern Spanish fiction and plays, and selections from scientific Spanish.

Text-book: Bouilla's Spanish Daily Life, and selections of scientific Spanish.

Prerequisite: Spanish 7.

SCHOOL OF MEDICINE

*FACULTY

James H. Baker, M.A., LL.D., President.

William P. Harlow, B.A., M.D., Dean.

James R. Arneill, B.A., M.D., *Denver*,
Professor of Medicine (Clinical Medicine).

William C. Bane, M.D., *Denver*,
Professor of Oto-laryngology.

Melville Black, M.D., *Denver*,
Professor of Ophthalmology.

Sherman G. Bonney, M.A., M.D., *Denver*,
Professor of Medicine.

Clough T. Burnett, M.D., *Boulder*,
Professor of Bacteriology.

T. Mitchell Burns, M.D., *Denver*,
Professor of Obstetrics.

F. Gillett Byles, M.A., M.D., *Denver*,
Professor of Hygiene.

George H. Cattermole, M.D., *Boulder*,
Professor of Medicine (Pediatrics).

John Chase, B.A., M.D., *Denver*,
Professor of Ophthalmology and Otology.

Samuel B. Childs, B.A., M.D., *Denver*,
Professor of Roentgenology.

David H. Coover, M.D., *Denver*,
Professor of Ophthalmology.

* Arranged alphabetically—professors, assistant professors, lecturers, instructors, assistants—without reference to length of service.

RICHARD W. CORWIN, M.D., LL.D., *Pueblo*,
Professor of Surgery.

WILLIAM B. CRAIG, M.D., *Denver*,
Professor of Surgery.

WILLIAM H. DAVIS, M.D., *Denver*,
Professor of Dermatology and Genito-Urinary Diseases.

JOHN BERNARD EKELEY, Ph.D., Sc.D., *Boulder*,
Professor of Chemistry.

CHARLES S. ELDER, M.D., *Denver*,
Professor of Surgery (Gynecology.)

JOHN M. FOSTER, M.D., *Denver*,
Professor of Oto-laryngology.

LEONARD FREEMAN, B.S., M.A., M.D., *Denver*,
Professor of Surgery.

LUMAN M. GIFFIN, M.D., *Boulder*,
Professor of Surgery.

OSCAR M. GILBERT, M.D., *Boulder*,
Professor of Medicine (Clinical Medicine).

CARBON GILLASPIE, M.D., *Boulder*,
Professor of Anatomy.

JOSIAH N. HALL, B.S., M.D., *Denver*,
Professor of Medicine.

HORACE G. HARVEY, B.A., M.D., *Denver*,
Professor of Surgery.

EDWARD C. HILL, M.S., M.D., *Denver*,
Professor of Chemistry (Toxicology).

JOSEPH C. HUTCHISON, M.S., M.D., *Denver*,
Professor of Obstetrics.

EDWARD JACKSON, M.A., M.D., *Denver*,
Professor of Ophthalmology.

WALTER A. JAYNE, M.D., *Denver*,
Professor of Surgery (Gynecology and Abdominal Surgery).

MOSES KLEINER, M.D., *Denver*,
Professor of Therapeutics.

ROBERT LEVY, M.D., *Denver*,
Professor of Oto-laryngology.

CHARLES B. LYMAN, M.D., *Denver*,
Professor of Surgery.

FRANCIS H. MCNAUGHT, M.D., *Denver*,
Professor of Obstetrics.

ARTHUR J. MARKLEY, D.D.S., M.D., *Denver*,
Professor of Dermatology.

WILLIAM C. MITCHELL, M.D., *Denver*,
Professor of Bacteriology.

GEORGE E. NEUHAUS, M.D., *Denver*,
Professor of Neurology and Psychiatry.

GEORGE B. PACKARD, M.D., *Denver*,
Professor of Surgery (Orthopedics).

ALVIN R. PEEBLES, M.D., *Boulder*,
Professor of Medicine (Theory and Practice).

HOWELL T. PERSHING, M.S., M.D., LL.D., *Denver*,
Professor of Neurology and Psychiatry.

JAMES H. PERSHING, B.A., *Denver*,
Professor of Medical Jurisprudence.

CHARLES A. POWERS, M.A., M.D., *Denver*,
Professor of Surgery (Clinical Surgery).

E. BARBER QUEAL, M.D., *Boulder*,
Professor of Physiology.

FRANCIS RAMALEY, Ph.D., *Boulder*,
Professor of Histology and Embryology.

EDMUND J. A. ROGERS, M.A., M.D., *Denver*,
Professor of Surgery.

WILLIAM J. ROTHWELL, M.D., *Denver*,
Professor of Medicine.

HENRY SEWALL, Ph.D., M.D., *Denver*,
Professor of Medicine.

WILLIAM H. SHARPLEY, M.D., *Denver*,
Professor of Medicine (Contagious Diseases).

CHARLES F. SHOLLENBERGER, M.D., *Denver*,
Professor of Medicine (Pediatrics).

GEORGE H. STOVER, M.D., *Denver*,
Professor of Roentgenology.

THOMAS E. TAYLOR, B.A., M.D., *Denver*,
Professor of Obstetrics.

JAMES C. TODD, B.Ph., M.D., *Secretary at Boulder*,
Professor of Pathology.

CHARLES B. VAN ZANT, M.D., *Denver*,
Professor of Physiology.

HOMER C. WASHBURN, B.S., Ph.C., *Boulder*,
Professor of Pharmacy.

*FRANK E. WAXHAM, M.D., *Denver*,
Professor of Laryngology and Rhinology.

ROSS C. WHITMAN, B.A., M.D., *Secretary at Denver*,
Professor of Pathology.

HERBERT B. WHITNEY, B.A., M.D., *Denver*,
Professor of Medicine (Pediatrics).

NEWTON WIEST, M.D., *Denver*,
Professor of Dermatology.

FROST C. BUCHTEL, M.D., *Denver*,
Assistant Professor of Surgery.

JACOB CAMPBELL, M.D., *Boulder*,
Assistant Professor of Surgery.

EDWARD F. DEAN, M.D., *Denver*,
Assistant Professor of Surgery (Clinical Surgery).

WALTER W. REED, M.D., *Boulder*,
Assistant Professor of Obstetrics.

AUBREY H. WILLIAMS, M.D., *Denver*,
Assistant Professor of Surgery (Clinical Surgery).

THEODORE D. A. COCKERELL, *Boulder*,
Lecturer on Comparative Anatomy.

EDWARD DELEHANTY, M.D., *Denver*,
Lecturer on Neurology.

OLIVER LYONS, M.D., *Denver*,
Lecturer on Genito-Urinary Diseases.

ALFRED R. SEEBASS, Ph.G., M.D., *Denver*,
Lecturer on Life Insurance Examinations.

* Died, September 4, 1911.

JOHN W. AMESSE, M.D., *Denver*,
Instructor in Medicine.

HENRY S. DENISON, B.A., M.D., *Denver*,
Instructor in Medicine.

CLAY E. GIFFIN, B.A., M.D., *Boulder*,
Instructor in Surgery.

PHILIP HILLKOWITZ, B.S., M.D., *Denver*,
Instructor in Serum Therapy.

CLARENCE B. INGRAHAM, B.Ph., M.D., *Denver*,
Instructor in Obstetrics.

TRACY R. LOVE, B.Ph., M.D., *Denver*,
Instructor in Physiology and Pharmacology.

FRANK R. SPENCER, B.A., M.D., *Boulder*,
Instructor in Ophthalmology and Oto-laryngology.

EDWARD B. TROVILLION, M.D., *Boulder*,
Instructor in Anatomy.

EDITH K. ROSS, *Boulder*,
Assistant in Pathology and Bacteriology.

MEDICAL SENATE

WILLIAM P. HARLOW, *Dean, Chairman.*
JAMES R. ARNEILL.
JOHN B. EKELEY.
CHARLES S. ELDER.
EDWARD JACKSON.
ROBERT LEVY.
CHARLES B. LYMAN.
ARTHUR J. MARKLEY.
GEORGE E. NEUHAUS.
E. BARBER QUEAL.
FRANCIS RAMALEY.
JAMES C. TODD.
ROSS W. WHITMAN, *Secretary.*

HOSPITAL AND DISPENSARY STAFF

DIRECTOR OF CLINICS AND CLINICAL LABORATORIES

WILLIAM WILEY JONES, B.A., M.D.

MEDICINE

PROFFESSORS

JAMES R. ARNEILL.
F. GILLETT BYLES.
JOSIAH N. HALL.
HENRY SEWALL.
WILLIAM H. SHARPLEY.
CHARLES B. VAN ZANT.
HERBERT B. WHITNEY.

DOCTORS

JOHN W. AMESSE.
ALBERT J. ARGALL.
RUDOLPH W. ARNDT.
J. MURRAY BARNEY.
ALPHA J. CAMPBELL.
BEN K. CLIFFORD.
F. ROSS COFFMAN.
HENRY S. DENISON.
BERNARD C. DORSET.
ERNEST W. EMERY.
FRANK P. GENGENBACH.
CHARLES A. GRAHAM.
RANULPH HUDSTON.
WILLIAM WILEY JONES.
TRACY R. LOVE.
GEORGE K. OLMSTED.
RUSSELL T. RAMSEY.

HARRY S. SHAFER.
L. HUBER SCHULTZ.
ADAM J. SIMPSON.
CARL E. WALBRACH.
WILLIAM M. WILKINSON.

NEUROLOGY

PROFFESSOR

GEORGE E. NEUHAUS.

DOCTORS

EDWARD DELEHANTY.
EDWARD W. LAZELL.
GEORGE MOLEEN.
BERNARD OETTINGER.
CYRUS L. PERSHING.

SURGERY

PROFESSORS

WILLIAM B. CRAIG.
EDWARD F. DEAN.
LEONARD FREEMAN.
CHARLES B. LYMAN.
GEORGE B. PACKARD.
CHARLES A. POWERS.
EDMUND J. A. ROGERS.
AUBREY H. WILLIAMS.

DOCTORS

FROST C. BUCHTEL.
ALEXANDER C. CRAIG.
ORA S. FOWLER.
HAROLD G. GARWOOD.
JOHN C. HERRICK.
S. FOSDICK JONES.
ISAAC B. PERKINS.
NATHANIEL A. THOMPSON.
HENRY W. WILCOX.

GYNECOLOGY

PROFESSORS

CHARLES S. ELDER.
WALTER A. JAYNE.

DOCTORS

HASKELL M. COHEN.
M. ETHEL V. FRASER.
CLARENCE B. INGRAHAM.
CHARLES JAEGER.
SAMUEL M. OPPENHEIM.
CUTHBERT POWELL.
MILLER E. PRESTON.
MARY REED STRATTON.

OBSTETRICS

PROFESSORS

T. MITCHELL BURNS.
JOSEPH C. HUTCHISON.

DOCTORS

IDA VALERIA BEERS.
THOMAS J. DANEHAY.
AGNES M. DITSON.
CHARLES A. FERRIS.
CLARENCE B. INGRAHAM.
GEORGE L. MONSON.
FRANK W. STAHL.

OPHTHALMOLOGY

PROFESSORS

JOHN CHASE.
DAVID H. COOVER.
EDWARD JACKSON.

DOCTORS

JOHN A. MCCAW.
DANIEL G. MONAGHAN.
WILLIAM A. SEDWICK.
HIRAM R. STILWILL.

OTO-LARYNGOLOGY

PROFESSORS

WILLIAM C. BANE.
JOHN M. FOSTER.
ROBERT LEVY.

DOCTORS

HUGO AUFMWASSER.
THOMAS E. CARMODY.
EDWARD WELLES COLLINS.
EDGAR F. CONANT.
CLAUD E. COOPER.
ELSIE SEELYE PRATT.
ORVILLE D. WESTCOTT.

DERMATOLOGY AND GENITO-URINARY DISEASES

PROFESSORS

WILLIAM H. DAVIS.
ARTHUR J. MARKLEY.
NEWTON WIEST.

DOCTORS

JOHN B. DAVIS.
OLIVER LYONS.
WILLIAM M. SPITZER.

DISEASES OF THE RECTUM

DOCTOR

ARTHUR H. EARLEY.

GENERAL STATEMENT

HISTORICAL NOTE

The University of Colorado School of Medicine was opened in September, 1883. The School has kept fully abreast with the rapidly increasing demands of modern educational methods. Special stress has always been laid on thorough instruction in the fundamental branches embraced in the curriculum of the first two years of the course, without which mastery of the remainder of the curriculum is impossible. The entire curriculum has recently been completely revised and modernized. On January 1, 1911, the Denver and Gross College of Medicine was united with this School, the two faculties being combined into one. The single school thus formed is an integral part of the University of Colorado. At the same time the third and fourth-year classes were transferred to Denver, where greatly enlarged clinical facilities are available. Practical clinical instruction is begun in the second year, the University Hospital at Boulder being used for training second-year students in the fundamental branches of clinical work. The third and fourth-year students, respectively, spend two and four hours daily in clinical work. The School is a member of the Association of American Medical Colleges.

The first two years constitute the Boulder Division of the School and the last two years the Denver Division. The Denver and Gross College of Medicine was the union June 19, 1902, of the Denver College of Medicine, a department of the University of Denver, and the Gross Medical College. The former College was opened November, 1881, and the latter in 1887.

EQUIPMENT IN BOULDER

BUILDINGS.

Medical Building—The Medical Building is a two-story brick structure with three one-story wings, located at the southwest corner of the campus. It affords class rooms for lecture and recita-

tion purposes, two large laboratories with abundant light on three sides, store rooms, general offices, and private laboratories for members of the faculty, and for advanced and graduate work.

Anatomy Building—This building was erected in 1908. It contains a large dissecting room, cloak rooms, an embalming room, and refrigerating plant capable of accommodating about 35 cadavers.

Pharmacy Building—This is a two-story brick building, well equipped for its purpose.

Chemistry Building—The Chemistry Building is located near the center of the campus. It is a two-story brick building, constructed with special reference to the teaching of chemistry, and devoted entirely to that purpose. It contains two large lecture rooms, and six laboratories, with abundant equipment for every kind of chemical work, reading rooms, private laboratories, stock rooms, balance room, chemical museum, etc.

Hale Science Building—This is a four-story stone building with two two-story wings, located near the north end of the campus. It affords accommodations for the Department of Biology, which includes the departments of Histology, Embryology and Medical Zoology, on the second floor. The laboratories are abundantly lighted from three sides.

Hospital—The Hospital was erected during the summer of 1898, and was dedicated November 19th of that year. The building is located on a high bluff adjacent to the campus and overlooking the City of Boulder and the great plains, and affords a beautiful view of the foothills and Arapahoe Peaks in the distance. It contains accommodations for forty patients, in wards and private rooms, and has in addition an operating room, a large and very fully equipped clinical laboratory, a sun parlor, sterilizing rooms, etc. It is constructed according to the most approved plans of hospital construction, and its equipment is complete and thoroughly modern. It is used for the purpose of giving elementary instruction of a clinical character to the second-year students.

Nurses' Home—The Nurses' Home is an eight-room, one-story frame cottage, situated west of the Hospital and near the latter.

Library—The University Library contains 61,030 bound volumes, and 30,000 pamphlets. A reading room for the special use of medical students has been provided, and in this the files of fifty-three of the most important American, English, French and German medical

periodicals, and important books are found for the use of the students, who have direct access to the shelves. The Library is open daily, except Sunday, from 7:45 a. m. to 10:00 p. m., throughout the academic year; during vacations, 9:00 a. m. to 5:00 p. m.

LABORATORIES.

The Anatomical Laboratory is situated in the Anatomical Building, already referred to. In addition to abundant material for dissections, it contains a large and very valuable collection of mounted preparations, skeletons, charts, models, etc., which is accessible to the students, under proper supervision, for use in connection with the work of the department.

Histology and Embryology are taught in the biological department. The laboratories are provided with compound microscopes, microtomes, thermostat, models, projection lantern, and other necessary equipment.

The Pathological Laboratory is a large room in the Medical Building, lighted on three sides. It is equipped with Leitz microscopes, the various types of microtome, of which two are provided for the use of students, and all reagents, stains, etc., needed for thorough examination of material according to the most modern methods. Accommodations are afforded for advanced research work, and every encouragement is offered to students to undertake work of this character. The Pathological Museum is already quite extensive, and further material derived from operations, post mortem examinations, and from other sources, is being constantly added.

The course in Bacteriology is conducted in one of the large laboratories in the Medical Building. During the past few years a large amount of new and valuable equipment has been added, and the laboratory is fully equipped for teaching this branch under the most favorable conditions. The equipment includes an ample number of high power Leitz microscopes, with oil immersion lenses, and a complete equipment of sterilizers, a large incubating room, affording a separate incubator for each student, an abundance of glassware, and special apparatus for bacteriological examination of air, water, soil, milk, food, etc. Convenient to the laboratory are the animal rooms, with a full supply of animals for experimental purposes.

The courses in chemistry for the medical students are given in the Chemistry Building, which is situated conveniently near to the Medical Building.

The equipment for the laboratory work in Physiology and Pharmacology is modern and complete. It is contained in the Bacteriological Laboratory.

EQUIPMENT IN DENVER

BUILDING.

MEDICAL BUILDING AND DISPENSARY—This is a three-story and basement building at the corner of Thirteenth and Welton Streets. It contains two lecture rooms, laboratories for work in pathology and the various branches of clinical diagnosis, smaller rooms for section and demonstration work, and rooms for the several departments of the Dispensary. The building is exceptionally well located for its purpose.

CLINICS.

As already noted, training of an elementary character is given the second-year class at the University Hospital at Boulder and, in the laboratories, in operative surgery on the cadaver and dog. In Denver, operative and bedside clinics, clinical conferences and ward-walks are held daily at the Denver City and County Hospital, of 300 beds; the Faculty has, through the courtesy of the Commissioner, a very large representation on the attending staff. The Hospital clinics are so arranged that small groups of students have an opportunity to study and observe the cases intimately, under the direction of the proper members of the faculty. The School also maintains a dispensary where daily clinics are attended by small groups of students in Medicine, Neurology, Surgery, Gynecology, Orthopedics, Eye, Ear, Nose and Throat, and in Dermatology and Genito-Urinary Surgery. There were more than 18,000 visits to the Dispensary in 1911. In addition to these clinics are held for small groups of students at St. Luke's Hospital, 100 beds; St. Anthony's Hospital, 200 beds; St. Joseph's Hospital, 200 beds; Mercy Hospital, 125 beds; the Woman's Hospital; the National Jewish Hospital for Consumptives; the State Home for Dependent Children; and the Contagious (Steele) Hospital.

There is abundant material for teaching obstetrics, each member of the senior class being required to personally deliver a mini-

mum of ten cases, in addition to seeing cases delivered by members of the faculty. Students who desire to do so may attend a much larger number of cases.

The faculty believes that the greatest benefit from clinics can only be obtained for the students by bringing them into the closest possible touch with the patients. In accordance with this belief the clinics at the Dispensary are conducted as "clinical conferences," whereby the students examine and treat the patients exactly as if they were their own private cases, assist at, and perform operations, administer anæsthetics, and superintend the after-treatment of surgical cases.

LIBRARY FACILITIES.

In the office there are several cases of medical books for immediate reference. The faculty and students have free access to the recently combined libraries of The Denver Academy of Medicine and The Denver County Medical Society contained in the rooms of the latter in the Metropolitan Building, and the Medical Section of the Denver City Library. The former contains 7,000 volumes and 160 current medical periodicals.

THE EDWARD G. STOIBER SCHOLARSHIP

The Edward G. Stoiber Scholarship Fund consists of the principal sum of $2,000 held in trust, the income of which is to be given each year to some student in the School of Medicine, designated by the donor or by the officers of the School. This scholarship was established in The Denver and Gross College of Medicine by Mrs. Edward G. Stoiber (now Mrs. Hugh R. Rood) in memory of the late Edward G. Stoiber. Under the terms of the merger agreement between The Denver and Gross College and the University of Colorado this fund has been transferred to the Regents, to be held in perpetuity for the purposes specified.

SESSION OF 1912-1913

The next term begins September 9, 1912.

Applicants for admission are urged to see that their entrance credentials are in the hands of the Secretary on or before September 6, 1912, in order that these may be examined and passed upon in advance of registration.

For general information, address the Registrar, Fred E. Hagen, Boulder; for special medical information, address the Secretary of the First and Second-Year Division, James C. Todd, M.D., Boulder, or the Secretary of the Third and Fourth-Year Division, Ross C. Whitman, M.D., Denver, or the Dean, William P. Harlow, M.D., Boulder.

REQUIREMENTS FOR ADMISSION

Two years of college work, estimated at sixty semester hours, and based upon a four-year high-school preparation, are required for admission. The following subjects are prescribed: At least one year of Latin, one year of high-school or college biology, one year of high-school or college physics, one year of college chemistry. The class graduating in 1913 is subject to the former requirement for admission, namely, graduation from a four-year high school, or equivalent.

All candidates for admission should present a certificate of good character from two physicians in the state in which they last resided.

Students are earnestly advised to be present at the opening of the session. No student will be allowed to enter later than the fifth week of the academic year.

ADVANCED STANDING

Candidates, from a medical college on the accepted list, who desire advanced standing in medical subjects, must present satisfactory credentials to the Dean or Secretary of the Medical School at the time of matriculation.

COURSES LEADING TO TWO DEGREES

Students who pursue courses during the first two years of collegiate work, which are not included in the medical curriculum, or who, in case medical courses have been included in the work of the first two years, take a corresponding amount of non-medical courses during the later years of the course, may earn a degree in Arts after four years, and degree in Medicine after two additional years, thus affording a course leading to two degrees after six years' work.

Beginning with the class entering in 1913 three years of college work will be required for the B.A. degree in a combined course.

REQUIREMENTS FOR A DEGREE

Every candidate for the degree of Doctor of Medicine must be twenty-one years of age, possess a good moral character, and be of temperate habits. He must have passed satisfactory examinations in all the required studies included in the full course of instruction. He must have attended regularly four full courses of lectures (allowance being made only for absence occasioned by the sickness of the student or of his immediate family, such absence not to exceed twenty percentum of any course) of not less than thirty-two weeks each, in some accredited medical college. No two of such courses shall have been taken in the same year. The last course shall be taken in this School.

FEES

For fees, see page 56.

*DESCRIPTION OF COURSES

FIRST YEAR (AT BOULDER)

ANATOMY

PROFESSORS GILLASPIE AND COCKERELL, AND DOCTOR TROVILLION:—Anatomy is taught by means of lectures, recitations, drawings, and demonstrations on the cadaver. Work in the dissecting room is prosecuted under the personal supervision of the professor and demonstrators of anatomy. Systematic demonstrations are made on the cadaver, and no pains are spared to have the student acquire a thorough knowledge of the anatomical details which are the necessary foundation for a complete medical education. Every facility and encouragement will be given the student in the anatomical room to pursue work beyond the requirements of the prescribed course. The anatomical material is furnished free.

1. OSTEOLOGY AND DISSECTION. *First semester.* 4 h. *daily.* 320 h.
   The first hour is used for recitations on osteology and the work done in dissection. The other three hours are spent in the dissecting room. During this time the students are required to dissect one lateral half of the body under the direct supervision of the Professor of Anatomy and assistants. Osteology is taught along with the dissection by means of systematic recitations on the bones of the parts the students are at that time dissecting. At the end of the semester each studen is given a private oral test, after which the whole class takes a written examination.
   Professor Gillaspie and Doctor Trovillion.

2. ANATOMY OF THE CENTRAL NERVOUS SYSTEM. *Throughout the year.* 32 h.
   Lectures, recitations, and demonstrations and dissections of the brain and cord.
   Students are given an opportunity to dissect brains, and are required to demonstrate the gross anatomy of the brain from

* The hours indicated after each course show the total time devoted to the course.

dissections. The principal fiber tracts are followed from the cord to the cortex by means of charts, lantern slides and microscopic sections.

Professor Gillaspie.

3. Comparative Anatomy. *Second semester.* 16 h.

The lectures cover the principles of comparative anatomy with discussion of questions of heredity, adaptation, evolution, etc.

Professor Cockerell.

4. Regional Anatomy. *Second semester.* 32 h.

In this course the different regions are studied by means of cross sections and special dissection. Careful attention is given to the relation of parts. In this way the students get a complete review of the work done during the first semester.

Professor Gillaspie.

Text-books: Morris, $7.50; Cunningham, $6.00; Gray; Piersol; Holden's Practical Anatomy, $3.00; Sobotta-McMurrich.

Collateral Reading: Toldt's Atlas of Human Anatomy, Quain's Anatomy, Spalteholz's Atlas of Human Anatomy, Eycleshymer and Schoemaker's Cross-Section Anatomy.

CHEMISTRY

Professor Ekeley and Mr. Dean:—

1. Organic Chemistry. *First semester.* 64 h.

The lecture course covers the different classes of organic compounds, with discussions of structural formulæ, and familiarizes the student with the important representatives of each group.

Professor Ekeley.

2. Organic Chemistry. *First semester.* 80 h.

The course consists of laboratory exercises, in which the student obtains a first-hand knowledge of the compounds discussed in the lectures.

Professor Ekeley and Assistants.

HISTOLOGY AND EMBRYOLOGY

PROFESSOR RAMALEY AND DR. ELLIS:—

1. HISTOLOGY. *Second semester.* 176 h.

Lectures, laboratory and text-book work.

The course begins with the study of the cell and simple tissues; then the glands, the teeth, and vascular and lymphatic systems, the respiratory, excretory, reproductive, and nervous systems, and sense organs are studied. Sufficient technical instruction is given to enable the students to work for themselves.

2. EMBRYOLOGY. *Second semester.* 96 h.

The course begins with a general account of the germ cell and the different methods of reproduction. Suitable material is provided for work on typical methods of gastrulation and the study of the blastoderm in different forms. The development of the chick and pig is studied in detail. In the last part of the course attention is given more particularly to human embryology. The text-book and lecture work will include chiefly a consideration of the development of the organs of the human body.

3. MEDICAL ZOOLOGY. *Second semester. Time to be arranged.*

Lectures, illustrated with lantern slides, and laboratory work.

In this course is given the structure and life history of such animals as are of most importance in the causation or transmission of disease. Some of the more important forms discussed are the following: Mosquitoes, ticks, mites, parasitic worms, protozoa. Special attention is given to life history, methods of infection, etc.

Text-books: Histology, Bailey; Embryology, Bailey and Miller, $4.00.

Reference books: Histology, Stohr; Embryology, Minot, McMurrich.

Library reference works: Parker and Haswell, Leuckhart, Cambridge Natural History, Hertwig. Students are also referred to recent literature in current medical journals.

PHYSIOLOGY

PROFESSOR QUEAL:—

1. PHYSIOLOGY. *Throughout the year.* 160 h.

Recitations on assigned subjects, with a limited amount of explanatory lecture.

The course covers the subjects of general and cellular physiology, physiology of nerve and muscle, digestion, absorption, secretion, nutrition, animal heat and force, blood, lymph, circulation, respiration and excretion, physiology of the central nervous system and the special senses.

Text-books: Brubacker, $4.00; Lombard.

Reference books: Howell, Hall, Tigerstedt.

MATERIA MEDICA AND PHARMACY

PROFESSOR WASHBURN:—

1. MATERIA MEDICA. *Throughout the year.* 64 h.

Lectures and recitations.

A study of the more important drugs, both organic and inorganic, in present use. In this course the various drugs are grouped according to their therapeutic uses, and special attention is given to their preparations and dosage.

2. PHARMACY. *Second semester.* 32 h.

Lectures, recitations and laboratory work.

A study of the various types of pharmaceutical preparations, such as fluid extracts, tinctures, ointments, spirits, emulsions, etc., together with practice in their preparation. Special reference is given to the order of combination, chemical and pharmaceutical incompatibilities, and doses. Each student prepares one or more preparations of each type.

SECOND YEAR (AT BOULDER)

ANATOMY

PROFESSOR GILLASPIE:—

1. SURGICAL ANATOMY. *Throughout the year.* 48 h.

In this course the students review carefully the anatomy of each part and learn its application to surgery. Special atten-

tion is given to the chest and abdomen; the female pelvis, both bones and soft parts, are studied in their relation to obstetrics. Second-year students are given an opportunity to do all the dissecting their time will permit.

2. Anatomy of the Central Nervous System and Special Sense Organs. *Second semester.* 48 h.

This is an elective course offered to psychology students. In this course the nervous system is studied by means of lectures and dissections of the brain and cord.

Text-books: Treve's Applied Anatomy, Campbell's Surgical Anatomy, Cunningham, Morris, Gray, Sobotta-McMurrich, Quain's Anatomy, Edinger's Anatomy of the Nervous System.

Collateral Reading: Toldt's Atlas of Human Anatomy, Deaver's Surgical Anatomy and Spalteholtz's Atlas of Human Anatomy.

BACTERIOLOGY

Professor Burnett:—

1. General Bacteriology. *First semester.* 32 h.

Lectures and recitations.

Professor Burnett.

Text-books: Hiss and Zinsser; Park's Pathogenic Bacteria and Protozoa, $3.75; Jordan's Text-Book of Bacteriology, Stitt's Bacteriology, Abbott's Principles of Bacteriology, $3.75; William's Bacteriology, Ricketts' Immunity, Chester's Manual of Determinative Bacteriology, Eyre's Bacteriological Technique, etc.

2. Practical Bacteriology. 128 h.

The course is divided into two main portions. In the first part of the course the student is instructed in the methods of bacteriologic technique and in the general principles of bacteriology. Many of the non-pathogenic bacteria are studied in the early part of the work. As soon as the student has studied a sufficient number of non-pathogenic micro-organisms a more detailed study of the pathogenic bacteria is entered upon. Much of this work is accompanied by animal experiments. In the latter part of the course some time is given to water and milk analysis. Each student is required to work out and iden-

tify a number of organisms given out as unknowns. The laboratory is open on Saturdays, from 8:00 to 12:30, for the benefit of students who are unable to finish the assigned work during the week, but attendance on these days is not required.

Professor Burnett and Assistant.

3. Advanced Bacteriology. *Second semester.*

This is an optional course and is open only to a limited number of students.

This course deals especially with the practical methods of immunization, preparation of vaccines, serum reactions, determination of the efficiency of antiseptics and disinfectants. Several of the more important protozoal diseases are studied. To such students as are qualified will be assigned special problems for investigation.

Professor Burnett.

PHYSIOLOGY

Dr. Love:—

1. Physiology. *First semester, eight weeks.* 96 h.

The course consists of practical laboratory exercises in which the student demonstrates for himself the physiological phenomena governing striated, non-striated and heart muscle; physiology of nerve and muscles in animals and man; the central nervous system; circulation in mammals and circulation and respiration in man. The course is supplemented by demonstrations by the instructor.

Text-book: Lombard's Manual, $1.50.

PHARMACOLOGY

Dr. Love:—

1. Pharmacology. *First semester, eight weeks.* 96 h.

Laboratory.

The above course consists of laboratory exercises conducted by the students, and demonstrations by the instructor, showing the actions of the more important drugs on animals and man. The course includes action of drugs on the central nervous system, circulation, respiration and digestion and toxicology.

2. Pharmacology. *Throughout the year.* 32 h.
Recitations.
The recitations are designed to cover the practical knowledge of pharmacology based on text-book and laboratory work.
Text-books: Sollmann, $4.00; Wood, $5.00; Hare, $4.00; Cushney, $3.75.

CHEMISTRY

Professor Ekeley and Mr. Dean:—

1. Physiological Chemistry. *Second semester.* 32 h.
The recitations are designed to review and clarify the work of the laboratory course next described.
Mr. Dean.

2. Physiological Chemistry. *Second semester.* 64 h.
After a review in the laboratory of the chemistry of the carbohydrates, fats, proteids, salivary, gastric, and intestinal digestion, etc., the student is made familiar with the various tests used in clinical medicine, by means of practical tests on unknowns furnished by the instructor.
Mr. Dean.
Text-book: Hawk, $3.00.

PATHOLOGY

Professor Todd:—

1. General Pathology. *Throughout the year.* 96 h.
Lectures and recitations based on assigned portions of Adami's text.
Students are required to write frequent reviews of the literature upon various subjects of pathologic interest.

2. Pathology. *Second semester, eight weeks.* 144 h.
Laboratory.
Sections of tissue are given out to the class as unknowns, to be mounted, studied, described and diagnosed. Approximately 200 specimens illustrating various microscopic lesions and tumors are studied in this way, and at the end of the course the student is required to hand in drawings and descriptions of all these. Whenever possible, gross specimens illustrating the lesions under consideration are demonstrated.

3. Special Work. *Second semester.*

To such students as desire it, opportunity is given for more advanced work in pathologic technique, microscopic diagnosis, photo-micrography, etc. Students are likewise encouraged to take up some simple research problem.

Text-book: Adami.

Reference books: Ziegler, Stengel, Delafield and Prudden.

CLINICAL DIAGNOSIS

Professor Todd:—

1. Recitation and Laboratory Course. *Throughout the year.* 96 h.

In this course are considered the numerous laboratory methods which are of value in clinical medicine, including examinations of sputum, blood, urine, stomach contents, feces and the various pathological secretions and excretions. The relation between laboratory findings and the pathology of the disease is constantly emphasized. Especial attention is given to technique.

Fresh material for the laboratory exercises is furnished by the University Hospital at Boulder and the City and County Hospital at Denver. There is an excellent collection of prepared material, illustrating especially the rarer blood diseases and animal parasites. Students have constant access to photomicrographs, atlases and reference books.

Text-book: Todd, $2.25.

Reference books: Simon, Emerson, Rieder's Atlas of Urinary Sediments, Jacob's Atlas of Clinical Diagnosis, Schleip's Atlas of Hematology.

PHYSICAL DIAGNOSIS

Professor Gilbert:—

1. Normal Physical Diagnosis. *First semester.* 48 h.

In this course the principles of Physical Diagnosis are considered and practice is given the student in physical examination of normal organs. Emphasis is laid upon the acquirement of a proper technique.

Text-books: Cabot, Sahli.

SURGERY

Professor L. M. Giffin, Assistant Professor Campbell, and Dr. Clay E. Giffin:—

1. Principles of Surgery. *Throughout the year.* 48 h.
Lectures and recitations.
This course includes wounds, the principles of the healing of wounds, inflammation, the action of pathogenic bacteria, necrosis, suppuration, ulceration, septicæmia, pyæmia, erysipelas, surgical tuberculosis and bandaging.
Professor L. M. Giffin and Dr. Clay E. Giffin.

2. Dog and Cadaver Surgery. *Second semester.* 96 h.
The various operations are performed upon dogs and the cadaver. Assistant Professor Campbell.

THIRD YEAR (AT DENVER)

MEDICINE AND THERAPEUTICS

Professors Kleiner, Peebles, Shollenberger, and Whitney, and Doctors Amesse, Arndt, Denison, Hillkowitz, and Jones:—

1. Theory and Practice. *Throughout the year.* 32 h.
This is a lecture course in which the principles of medicine are dealt with. It is continuous with the corresponding course given in the fourth year. Professor Peebles.

2. Quiz Course. *Throughout the year.* 128 h.
This is a systematic quiz course, in which the ground of internal medicine is covered in recitations based on assigned portions of a standard text.
Doctors Amesse, Arndt, Denison, and Jones.

3. Pediatrics. *Throughout the year.* 32 h.
Lectures and recitations.
Infant feeding and the important diseases of infancy and childhood are covered.
Professors Shollenberger and Whitney.

4. Clinical Therapeutics. *Throughout the year.* 32 h.
This is a lecture and quiz course, dealing with drug therapeutics, as distinct from materia medica and pharmacology, and

with hydro-, vaccine-, serum-, organo-, climato-, and mechanotherapy, and massage.

Professors Kleiner and Peebles, and Doctor Hillkowitz.

5. Physical Diagnosis. *Five weeks.* 50 h.

Supplementing the course in normal physical diagnosis given in the second year, small groups of students are given practical training in methods of examination, and in the recognition of abnormal signs, together with lectures and recitations on the interpretation of these. Material is furnished by the Dispensary.

Doctor Denison.

Text-books: Edwards, $5.50; Osler, $5.50; Anders, $5.50; Tyson, Cabot, $3.50; Sahli, $6.50; Emerson, $5.00.

Reference books: Albutt's System, Osler's Modern Medicine, Nothnagel's Encyclopedia of Practical Medicine (American Edition), Forcheimer's The Prophylaxis and Treatment of Internal Diseases, Da Costa, Wilson, Current Medical Literature.

NEUROLOGY

Professor Neuhaus, and Doctors Lazell and Cyrus W. Pershing:—

1. Principles of Neurology. *Throughout the year.* 32 h.

The lectures cover a review of the anatomy and physiology of the central nervous system, the symptomatology of these regions, methods of case taking, the examination of patients, etc.

Professor Neuhaus.

2. Demonstration Course. *Five weeks.* 50 h.

The course consists in practical exercises in the examination of patients, making of physical examinations from the neurological point of view, with drill in the physiological interpretation of neurological signs and symptoms, and includes instruction in the application of electricity in its various forms to diagnosis and therapeusis.

Professor Neuhaus and Doctors Lazell and Pershing.

Text-book: Dana, $6.00.

SURGERY

PROFESSORS HARVEY AND PACKARD, AND ASSISTANT PROFESSOR BUCHTEL:—

1. MINOR SURGERY AND PRINCIPLES OF SURGERY. *Throughout the year.* 112 h.

Lectures and recitations.

The course covers anæsthesia, the general principles of operative technique, the laws of inflammation and repair of tissues, the surgery of the bones and joints, and the surgical operations generally included under the title "Minor Surgery."

Professor Harvey, and Assistant Professor Buchtel.

2. ORTHOPEDICS. *First semester.* 32 h.

Lectures and recitations on the important orthopedic conditions. Professor Packard.

Text-books: Da Costa, $5.50; Parke, Nancrede's Principles of Surgery, Senn's Principles of Surgery.

Reference books: Jacobson's The Operations of Surgery, Bryant's Operative Surgery.

OBSTETRICS

PROFESSOR HUTCHISON, ASSISTANT PROFESSOR REED, AND DOCTOR INGRAHAM:—

1. QUIZ COURSE. *Throughout the year.* 64 h.

The physiology, diagnosis, mechanics, and after management of normal pregnancy.

Professor Hutchison and Assistant Professor Reed.

2. MANIKIN COURSE. *Five weeks.* 50 h.

Small sections of the class are given practical drill on the manikin, and in methods of making physical examinations of gynecological and obstetrical cases from the dispensary service. Dr. Ingraham.

Text-book: Edgar, $6.00.

OPHTHALMOLOGY

PROFESSORS JACKSON AND BLACK:—

1. LECTURE COURSE. *Throughout the year.* 32 h.
The lectures cover the principles of physiological optics and refraction, the ocular movements, and the diseases of the eye which are of most importance in general practice.

Text-books: Jackson, $2.50; Hansell and Sweet.

OTO-LARYNGOLOGY

PROFESSORS BANE, FOSTER, JACKSON, AND LEVY:—

1. LECTURE COURSE. *Throughout the year.* 32 h.
The lectures cover the ground of the diseases of the ear, nose and throat.

Professors Bane, Foster, and Levy.

Text-books: Roosa and Douglas, Buck, Bacon, Saunder's Hand Atlas.

2. DEMONSTRATION COURSE. *Six weeks.* 60 h.
Small sections of the class are given lectures and quizzes on anatomy and physiology of the eye, ear, nose, and throat, and practical drill in the use of the ophthalmoscope, otoscope, laryngoscope, rhinoscope, intubation, etc.

Professor Jackson and Assistants.

PATHOLOGY

PROFESSOR WHITMAN:—

1. LECTURES. *Throughout the year.* 32 h.
Lectures and recitations.
Post mortem technique, the specific infections, and the more important topics of special pathology are dealt with.

2. LABORATORY COURSE. *Throughout the year.* 128 h.
This course consists of two parts. The first will include practical exercises in immunity, with special reference to the complement deviation tests as applied to the diagnosis of various diseases, the more important of the newer sero-diagnostic

tests for cancer, and various special laboratory diagnostic methods not included in the course in Clinical Diagnosis. The second part of the course is devoted to the study of pathological technique, and the lesions usually included under the term "Surgical Pathology," with special reference to uterine curettings, tumor diagnosis, and the process of repair in various tissues.

PHYSIOLOGY

Professor Van Zant:—

1. Pathological Physiology. *First semester.* 16 h.
Lectures covering the field of perverted action and function of diseased organs.

HYGIENE

Professor Byles:—

1. Lectures. *Throughout the year.* 32 h.

MEDICAL JURISPRUDENCE

Professor James H. Pershing:—

1. Lectures. *Throughout the year.* 32 h.

TOXICOLOGY

Professor Hill:—

1. Lectures. *Throughout the year.* 32 h.

FOURTH YEAR (AT DENVER)

MEDICINE

Professors Arneill, Gilbert, Hall, Peebles, Rothwell, Sewall, and Whitney, and Doctors Amesse, Arndt, Byles, Emery, Gengenbach, Van Zant and Walbrach:—

1. Theory and Practice. *Throughout the year.* 32 h.
Lectures continuing the similar course given in the third year. Professors Peebles and Rothwell.

2. Case Teaching. *Throughout the year.* 32 h.
In this course special attention is paid not only to the diagnosis but to the therapeutic principles and remedies suited to the case under discussion.
Professor Gilbert and Dr. Emery.

3. Dietetics. *Throughout the year.* 32 h.
Lectures.
This course covers the physiology of digestion, physiological and pathological metabolism, and application to specific pathological conditions. Professor Peebles.

4. Clinics and Clinical Conferences. *One semester.* 128 h.
Patients are assigned to the students who present a detailed study of the case for discussion at a clinical conference.
Professors Arneill, Sewall, Hall, and Doctors Arndt, Walbrach, Byles, and Sharpley.

5. Dispensary Work. *Four weeks.* 48 h.
This course consists in section work conducted by the students under instruction of the staff.
Professors Arneill, Sewall, Hall, Whitney and Assistants.

Text-books: Edwards, $5.50; Osler, $5.50; Anders, $5.50; Tyson, Holt, $6.00; Friedenwald and Rühran.

Reference books: Albutt's System, Osler's Modern Medicine, Nothnagel's Encyclopedia of Practical Medicine (American Edition), Forcheimer's The Prophylaxis and Treatment of Internal Diseases, Current Medical Literature.

NEUROLOGY AND PSYCHIATRY

Professors Neuhaus and H. T. Pershing, and Doctors Delehanty, Lazell, and Moleen:—

1. Neurology and Psychiatry. *Throughout the year.* 64 h.
The lectures cover the subject of psychiatry, following Kraepelin's text-book, psycho-neuroses, and the principles of psychotherapy; and the organic diseases of the peripheral nerves, spinal cord and brain.
Professor Pershing and Dr. Delehanty.

2. Clinics. *One semester.* 64 h.
Patients are assigned to each student who presents a detailed study of the case for discussion at a clinical conference.
Professor Neuhaus and Doctors Delehanty, Lazell, and Moleen.

3. Dispensary Work. *Four weeks.* 48 h.
This course consists in section work conducted by the students under instruction of the staff.
Professor Neuhaus and Assistants.

SURGERY

Professors Craig, Corwin, Freeman, Lyman, Powers and Rogers, and Doctors Dean, Perkins and Williams:—

1. Lectures. *Throughout the year.* 96 h.
This course includes tumors and injury to the abdomen, surgery of the breast and amputations, surgery of the intestines, liver, spleen and pancreas, genito-urinary surgery, surgery of the head, neck and rectum.
Professors Craig, Corwin, Freeman, Lyman and Rogers.

2. Clinics. *One semester.* 128 h.
Professors Craig, Freeman and Lyman, and Doctors Dean, Perkins and Williams,

3. Dispensary Work. *Four weeks.* 48 h.
The course consists in section work conducted by the students under the instruction of the staff.
Professors Craig, Freeman, Lyman, Packard, Powers, and Assistants.

GYNECOLOGY

Professors Elder and Jayne, and Doctors Oppenheim, Stratton, Ingraham, Fraser and Preston:—

1. Clinics. *One semester.* 64 h.
Professors Elder and Jayne, and Doctors Cohen, Jaeger, Powell and Preston.

3. Dispensary Work. *Four weeks.* 48 h.
The course consists in section work by the students under the instruction of the staff.
Professor Jayne and Assistants.

OBSTETRICS

Professors Burns, McNaught, Taylor and Assistants:—

1. Lectures. *Throughout the year.* 64 h.
The lectures cover the ground of abnormal pregnancy, labor, and the puerperium, completing the course begun in the third year.
Professors Burns, McNaught and Taylor.

2. Clinical Course. *Irregular.*
In addition to clinics and demonstrations at the hospitals, each student is required personally to deliver ten cases.
Professor Hutchison and Assistants.

Text-books: Edgar, $6.00; Hirst, $5.00.

OPHTHALMOLOGY

Professors Chase, Jackson, Coover and Assistants:—

1. Dispensary Work. *Four weeks.* 48 h.
The course consists in section work conducted by the students under the instruction of the staff.

OTO-LARYNGOLOGY

Professors Bane, Foster, Levy and Assistants:—

1. Dispensary Work. *Four weeks.* 48 h.
The course consists in section work conducted by the students under the instruction of the staff.

2. General Clinics. *Throughout the year.* 64 h.
In addition to the above dispensary sections, a general clinic is held once each week at the County Hospital in diseases of the eye, ear, nose, and throat, at which are shown cases which could not be properly treated in the Dispensary. The clinics are held by the member of the faculty and clinical staff proper to the case under consideration.

DERMATOLOGY AND GENITO-URINARY DISEASES

PROFESSORS DAVIS AND WIEST, AND DOCTORS MARKLEY AND LYONS:—

1. LECTURES. *Throughout the year.* 32 h.

These lectures cover the ground of the important diseases of the skin and of genito-urinary surgery.

Professors Davis and Wiest.

2. DISPENSARY WORK. *Four weeks.* 48 h.

The course consists in section work conducted by the students under the instruction of the staff.

SUMMARY OF HOURS FOR 1912-1913

FIRST YEAR:				
Anatomy	160	240	..	400
Chemistry	64	80	..	144
Histology and Embryology	96	176	..	272
Materia Medica and Pharmacy	64	32	..	96
Physiology	160	...	..	160
	544	528	..	1,072
SECOND YEAR:				
Anatomy	48	...	..	48
Bacteriology	32	128	..	160
Chemistry	32	64	..	96
Clinical Diagnosis	32	64	..	96
Eye, Ear, Nose and Throat	16	...	..	16
Pathology	96	144	..	240
Pharmacology	32	96	..	128
Physical Diagnosis	...	48	..	48
Physiology	...	96	..	96
Surgery	48	96	..	144
	336	736	..	1,072
THIRD YEAR:				
Eye, Ear, Nose and Throat	64	...	50	114
Gynecology	32	...	..	32
Hygiene	32	...	..	32
Medical Jurisprudence	32	...	..	32
Medicine	160	...	..	160
†Obstetrics	64	...	50	114
Neurology, Electro-therapeutics, and X-Ray	48	...	50	98
*Pathology	32	128	..	160
Pediatrics	32	...	..	32
Physical Diagnosis	...	...	50	50
Physiology	16	...	..	16
Surgery	128	...	..	128
Therapeutics	32	...	..	32
	672	128	200	1,000

FOURTH YEAR:				
Dermatology and Genito-urinary Diseases	32	...	48	80
Dietetics	32	...	..	32
Eye, Ear, Nose and Throat	...	...	96	96
Gynecology	...	...	112	112
Medicin*	64	...	176	240
Neurology, Electro-therapeutics, and X-Ray	64	...	112	176
†Obstetrics	64	...	...	64
Surgery	160	...	176	336
	416	...	720	1,136
RECAPITULATION:				
First year	544	528	...	1,072
Second year	336	736	...	1,072
Third year	672	128	200	1,000
Fourth year	416	...	720	1,136
	1,968	1,392	920	4,280

* Does not include time at autopsies.

† Does not include time at clinical cases.

The above table is based on a teaching year of thirty-two weeks, four weeks having been subtracted from the academic year of thirty-six weeks, namely, one week for registration, two weeks for examinations, and one week for graduation exercises.

UNIVERSITY HOSPITAL

The State Hospital is located on high ground overlooking the city of Boulder, having an unobstructed view of the mountains and the beautiful Boulder Valley. Being upon high ground, excellent drainage is assured. The building is heated with hot water throughout, on the plan known as the direct-indirect system. The ventilation is excellent. Every room is so located that it receives the direct rays of the sun.

There are two general wards, one for women, having seven beds; the other for men, having ten beds. Aside from the general wards, there are ten private rooms.

The physicians for the general wards are selected from the faculty of the Department of Medicine. Patients occupying the private rooms may employ any reputable physician whom they may elect. Any physician may place his patient in one of the private rooms and continue in charge of the case.

Many forms of disease are of such a nature that the patient cannot well be treated and cared for at home, or the patient may be without home care. Any such case may be sent to the Hospital, and, in the private rooms, may be cared for by his own physician if he so elects, or he will be cared for by some member of the staff, selected by the physician referring the case to the Hospital.

HOSPITAL FEES

Fees in the Hospital are as follows:

General wards, $12 per week; private rooms, $16 to $22 per week; operating room, $5 to $10; special nurse, $20 per week; medicine and dressings at cost.

UNIVERSITY OF COLORADO TRAINING SCHOOL FOR NURSES

The University of Colorado Training School for Nurses, which has been in successful operation for the past twelve years, offers a thorough course of training to young women who desire to enter the profession of nursing. The course of instruction comprises: Practical work in the wards; theoretical work in class, and lectures; dietetics; training school administration.

For admission, a certificate of moral character must be presented from two reliable persons of the place in which the applicant last resided, and a certificate of health from a physician. Evidence of at least two years' work in a high school, or equivalent, is required. The applicant must not be less than nineteen or more than thirty years of age. Applicants may be admitted at any time when a vacancy exists.

The applicant is received on probation for three months. During this period she receives room, board and a reasonable amount of laundry service. Upon the completion of the probationary period, if her work has been satisfactory to the Superintendent of the Training School, she is retained as a pupil. Pupils receive $8.00 per month. This sum is allowed for the uniform, text-books and other incidentals, but is not intended as wages. It is considered that the education given is fully equivalent for services. An annual vacation of two weeks is allowed each pupil.

Six lectures are given each week, beginning in September, and continuing until June. There is the usual intermission in lectures at Christmas.

Every applicant for graduation must have completed the required practical courses, and have passed satisfactory examinations in all the required studies and have been a regular member of the Training School for three years. For additional information, address the Superintendent of the Training School, Elisabeth V. Miller, Boulder, Colorado.

The following is the list of lecturers in the Training School:

ELISABETH V. MILLER,
Superintendent of Training School, Ethics of Nursing, Practical Nursing, and Dietetics.

LUMAN M. GIFFIN, M.D.,
Surgery and Surgical Nursing.

GEORGE H. CATTERMOLE, M.D.,
Diseases of Children, Infant Feeding, Children's Nursing.

OSCAR M. GILBERT, M.D.,
Internal Medicine and General Nursing.

E. BARBER QUEAL, M.D.,
Physiology and Hygiene.

CARBON GILLASPIE, M.D.,
Anatomy and Histology.

WALTER W. REED, M.D.,
Obstetric Nursing.

WILLIAM A. JOLLEY, M.D.,
Materia Medica.

CLOUGH T. BURNETT, M.D.,
Bacteriology.

MRS. ESTHER MILLER,
Massage.

The following constitute the Hospital Committee:

WILLIAM P. HARLOW, B.A., M.D.,
Chairman.

LUMAN M. GIFFIN, M. D.,
Superintendent of Hospital.

OSCAR M. GILBERT, M. D.,
WALTER W. REED, M.D.,
FRANK R. SPENCER, B.A., M.D.,

SCHOOL OF PHARMACY

FACULTY

Homer C. Washburn, Ph.C., B.S. in Phar.,
Professor of Pharmacy.

The Faculty of the School of Pharmacy consists of Professors and Instructors in the College of Liberal Arts and School of Medicine whose work contributes to the various courses.

GENERAL STATEMENT

ORGANIZATION

The Board of Regents in April, 1911, authorized the establishment of a School of Pharmacy, to be a division of the School of Medicine.

FUNCTION

The School offers thorough and practical courses in all the various subjects pertaining to pharmacy, and fits the student to pursue any of the various branches of the profession.

It is the aim of the School to co-operate with the State Board of Pharmacy and the State Pharmaceutical Association in maintaining a high standard in the profession of pharmacy.

REQUIREMENTS FOR ADMISSION

Completion of four years of high-school work or equivalent is required for entrance. At least one year of Latin is prescribed.

See page 47.

EQUIPMENT

Ample facilities are provided for carrying on the work in the School of Pharmacy. The work in Bacteriology, Botany, and Chemistry is done in the departments of the College of Liberal Arts and of the School of Medicine, a description of which may be found under the proper headings in the College of Liberal Arts and the School of Medicine.

The Department of Pharmacy proper is housed in a two-story brick building formerly used by the School of Medicine. It is well equipped with the usual facilities for carrying on work of this character. The lecture and recitation room, laboratory, and

office rooms are all well lighted and ventilated, and are provided with water, gas, and drainage.

FEES

For fees, see page 56.

COURSES

The School of Pharmacy offers three courses of study as follows:

1. A two-year course leading to the degree Pharmaceutical Chemist (Ph.C.).

2. A three-year course leading to the degree Bachelor of Pharmacy (B. Phar.). [The third year of this course is given in Denver.]

3. A four-year course leading to the degree Bachelor of Science in Pharmacy (B.S. in Phar.).

The work of the first two years in all three courses is the same, and a student may complete the Ph.C and B. Phar. courses in three years, or the Ph.C and B.S. in Phar. courses in four years.

SCHEDULE

In outlining the courses of study it is the aim of the faculty to adhere, as nearly as may be, to the recommendations of the National Committee representing the Boards and Schools of Pharmacy of the United States, as contained in the Pharmaceutical Syllabus.

THE PH. C. COURSE AND FIRST TWO YEARS OF B. PHAR. AND B. S. IN PHAR. COURSES

First Year.

FIRST SEMESTER			SECOND SEMESTER		
Inorganic Chemistry	(Chem. 1 and 2)	5	Inorganic Chem.	(Chem. 1)	3
Qual. Analysis	(Chem. 3)	2	Qual. Analysis	(Chem. 4)	2
Pharmacy	(Phar. 1)	5	Pharmacy	(Phar. 2)	5
Pharmacognosy	(Mat. Med. 1)	3	Pharmacognosy	(Mat. Med. 2)	2
			Botany	(Mat. Med. 3)	3
		15			15

Second Year.

FIRST SEMESTER		SECOND SEMESTER	
Quan. Analysis (Chem. 5a and 5b)	5	Quan. Analysis (Chem. 6a and 6b)	5
Organic Chem. (Chem. 12)	4	Pharmacy (Phar. 4)	5
Pharmacy (Phar. 3)	5	Materia Medica (Mat. Med. 5)	2
Materia Medica (Mat. Med. 4)	2	Phar. Latin	3
	16		15

THE B. PHAR. COURSE

The schedule for the first and second years of the B. Phar. course has already been outlined under the Ph.C. course. The third year is given in Denver and the schedule will be announced later.

THE B. S. IN PHAR. COURSE

The first two years of this course are the same as outlined under the Ph.C. course.

The work of the third and fourth years is drawn very largely from the science departments of the College of Liberal Arts and from the School of Medicine. The student, with the advice of the committee on registration, will be allowed considerable latitude in the choice of his work, but it must be chosen with an idea to specialization and efficiency in some particular line of pharmaceutical industry.

DESCRIPTION OF COURSES

PHARMACY

1. Theoretical Pharmacy. *First semester.* 5 h.
   Lectures and recitations.
   A study of the principles used in pharmacy, together with a sufficient number of demonstrations to illustrate their application, including pharmaceutical arithmetic.
2. Official Pharmacy and Pharmaceutical Technique. *Second semester.* 5 h.
   Recitations and laboratory work.
   A study of the drugs and preparations of the United States Pharmacopœia as far as the liniments. Special reference is

given to standard requirements, solubilities, tests for purity, assay methods, and dose. The student makes several preparations of each pharmaceutical type, as well as a number of non-official preparations, making in all about forty preparations for the course.

3. Continuation of Course 2. *First semester.* 5 h.
Recitations and laboratory work.
The latter half of the United States Pharmacopœia is studied as in course 2, and about sixty preparations are made by the student.

4. Pharmaceutical Testing and Assaying. *Second semester.* 5 h.
An application of the official and standard tests for identification, purity, detection of adulteration and assay of official drugs, including qualitative tests for the alkaloids and practice in their separation and identification.

5. Pharmaceutical Latin. *Second semester.* 3 h.

MATERIA MEDICA

1. Pharmacognosy. *First semester.* 3 h.
Lectures and recitations.
A study of the vegetable and animal drugs with special reference to identification, habitat, methods of collection and preparation for the market, medicinal constituents, official preparations and dose.

2. Continuation of Course 1. *Second semester.* 2 h.
Lectures and recitations.
With course 1 it covers all the official vegetable and animal drugs, as well as the more important non-official drugs.

3. Botany 6 (or Equivalent).
For a description of this course, see under Biology in the College of Liberal Arts.

4. Materia Medica. *First semester.* 2 h.
Lectures and recitations.
This course deals with the pharmaco- and therapy-dynamics of the more important drugs, both official and non-official.

5. Continuation of Course 4. *Second semester.* 2 h.
Lectures and recitations.
With course 4 this covers all the more important drugs in present use.

CHEMISTRY

For description of the courses in Chemistry, see under Chemistry in the College of Liberal Arts.

SCHOOL OF LAW

FACULTY AND LECTURERS

FACULTY

JAMES H. BAKER, M.A., LL.D., *President.*

JOHN D. FLEMING, B.A., LL.B., LL.D., Dean,
Professor of Law; Associate Judge of Practice Court.

MOSES HALLETT, LL.D.,
Dean and Professor of American Constitutional Law, *Emeritus.*

JOHN CAMPBELL, M.A., LL.B., LL.D.,
Dean *Emeritus;* Professor of Law of Private and Municipal Corporations.

ALBERT A. REED, LL.B.,
Professor of Law.

WILLIAM H. BRYANT, B.S., LL.B.,
Professor of Law.

EDWIN VAN CISE,
Professor of Law.

WILLIAM H. PEASE, B.A., LL.B.,
Professor of Law.

JAMES F. WILLARD, Ph.D.,
Professor of American and English Constitutional and Political History.

FRED G. FOLSOM, B.A., LL.B.,
Instructor in Law; Judge of Practice Court.

CARL C. ECKHARDT, Ph.D.,
Instructor in History.

LECTURERS

HUGH BUTLER,
Lecturer on Common Law Pleading.

ROBERT S. MORRISON,
Lecturer on Laws of Mines and Mining.

CHARLES S. THOMAS, LL.B.,
Lecturer on Law of Evidence.

LUCIUS M. CUTHBERT, M.A., LL.B.,
Lecturer on Roman Law.

JOHN A. RINER, LL.B.,
Lecturer on International Law.

CHARLES D. HAYT,
Lecturer on Law of Taxation.

WILLARD J. WHITE, M.A., M.D.,
Lecturer on Medical Jurisprudence.

ERNEST L. WILLIAMS, LL.B.,
Lecturer on Appellate Procedure.

JAMES W. MCCREERY,
Lecturer on Law of Irrigation and Water Rights.

JOHN E. ROBINSON,
Lecturer on Bankruptcy.

HARRY S. SILVERSTEIN, B.A.,
Lecturer on Criminal Procedure.

OLIVER C. WILSON, B.A.,
Librarian.

EUGENE A. BOND,
Assistant Librarian.

EARL E. WRIGHT,
Assistant Librarian.

FRANK BOTTUM,
Clerk of the Practice Court.

LYMAN T. ELWELL,
Stenographer.

SCHOOL OF LAW

STATEMENT

The Law School was opened in September, 1892. The course of study covers three years of thirty-six weeks each. The school is a member of the Association of American Law Schools.

BUILDING

The School of Law is now occupying its new building. This building contains commodious class rooms, professors' rooms, a moot court room, and a large room for the library. It is the gift of Senator Simon Guggenheim.

ACADEMIC YEAR

The Academic Year, 1912-1913, will begin on Monday, September 9, 1912.

ADMISSION

In addition to a regular four-year high-school course or its equivalent, two years of college work, estimated at sixty semester hours, is required for admission. This preliminary entrance requirement includes at least two high-school units of Latin. All applicants for admission must present certificates of good moral character.

ADVANCED STANDING

Admission to advanced standing will be allowed to candidates, if otherwise entitled to admission to the School as regular students, who satisfy the faculty that they have made sufficient progress in the study of law.

SPECIAL STUDENTS

Candidates twenty-one years of age, who cannot satisfy the admission requirements, but are qualified to pursue special work, may be admitted to certain courses with the approval of the Law Faculty.

DEGREE OF BACHELOR OF LAWS

The degree of Bachelor of Laws will be conferred on students who have passed all the examinations of the entire course. The candidate for a degree must have pursued at least one year's course as a resident student. No degree will be conferred until the candidate shall have reached the age of twenty-one years.

DEVELOPMENT OF THE AMERICAN LAW SCHOOL

Legal education in this country has come to be a matter of law-school instruction. For many years the number of students in law offices has decreased; practicing lawyers have gradually given less and less attention to the instruction of students in their offices. Meanwhile the number of law schools and the number of students in law schools have rapidly increased.

In 1878 there were fifty schools with 3,012 students. According to the report of the United States Commissioner of Education for 1910, there were at the date of the report 128 law schools; the number of students therein was 19,567.

Law schools have not only increased in number and in students, but they have made very general and marked advancement in requirements for admission, and for graduation; in the prescribed course of study; and in methods of instruction. The one-year law school has become constantly rarer and at the time of the above report there were only two remaining in the United States. Now most schools of good standing require at least college matriculation, or its equivalent, as a condition of admission; prescribe a course of study covering three years and occupying all the student's time; and grant the LL.B. degree only after a rigid and searching examination; while many now require in addition to a standard high-school course, one or two years of college work for admission.

METHOD OF INSTRUCTION

As to methods of instruction, no subject connected with legal education has been the occasion of so much controversy. Three distinct plans are found in use in different institutions:

(a) That which may be called the text-book method, and consists of class-room recitations and quizzes upon assigned portions of a legal treatise.

(b) What is known as the "Case-System," as understood and taught at Harvard, originated there more than a quarter of a century ago, and although not in general use, has been gradually adopted to a greater or less extent in a number of the best law schools. It consists of the inductive study of carefully arranged and selected cases. It does not exclude the use of texts and commentaries on the law, by the student in his individual research, but requires no use of them for class-room work.

(c) The teaching of law by lectures has the authority of age, and has been pursued in the profession for hundreds of years, certainly as far back as the reign of Elizabeth, when there were "readers," very important officials, who gave instruction, both in the inns of court, and in the inns of chancery. This plan was pursued in this country also by Judge Wilson of Pennsylvania in 1790 and 1791, afterwards by Chancellor Kent of New York, by the Litchfield Law School, and in the early days of Harvard. At a later period it fell somewhat into disuse and seemed about to be abandoned. Recently it has been regaining lost ground.

Each of these methods has its advantages and limitations, and each its earnest advocates.

Though text-book recitations have been entirely abandoned in some of the best law schools, it may well be doubted whether, by any other means, the beginner in legal studies can so quickly acquire an accurate and systematic knowledge of legal principles as by the study of the *best*, and only the best, text-books and commentaries. Were that the sole object of the student, there could be no better method. The purpose, however, of legal study, is to make a lawyer, and the mere knowledge of legal principles falls far short of converting the law student into a lawyer. In addition, there must be a marked development in the man himself; he must learn to think independently, to weigh authorities, to deduce principles from adjudications, to carefully discriminate in their application, to appreciate the *ratio decidendi*. In no other way can he make the intellectual stride so surely as by careful study and analysis of well-selected precedents, followed by earnest class-room discussion and debate, presided over by the instructor, upon the application of the principles involved. In such work the student's mental attitude is active and largely that of an independent investigator. Each step requires thought, actual mental effort, and so results in mental development. His work is done with a sense of responsibil-

ity, and so is thorough. He becomes inured to an atmosphere of mental antagonism and criticism, and soon learns to defend his position with good temper and some skill, and perhaps, to detect the flaw in his opponent's argument. Step by step he is growing into a lawyer. Such, fairly considered, are the merits of the "Case System." Perhaps its advantages can be best derived by a student who has been previously prepared for such work by the study of good text-books.

The law lecture, which has so well withstood the test of time, is not to be ignored or depreciated. When delivered by a really eminent specialist, a man of magnetic and intellectual force, it brings both legal principles and reasoning home to the mind of the attentive student, with a vividness and force that stimulates his thought and vitalizes his reading. The personality of the lecturer, and the previous training of the student are all important factors of success.

These considerations have induced the Faculty of the Colorado School of Law to adopt a scheme of instruction which involves the employment of all three systems. Much of the first year's work consists of class-room recitations from standard text-books; some time is given to lectures; and the student makes his first trial of case study, the work being limited in amount and graduated to the progress of the class. In the second year, the bulk of the work is done with cases, though text-books and lectures are not altogether disused. In the third year, cases are still used, but the proportions are reversed. There are a few courses of case work, text-books being disused in the class-room, and many courses of lectures. These are delivered by some of the most eminent members of the profession in Colorado, to students who have been prepared and seasoned by two years' hard study of text-books and cases.

Thus the scheme of instruction is composite, and designed to secure a maximum of the excellence while accompanied by a minimum of the faults of each of the three methods.

COURSE OF STUDY

It is the purpose of the School to afford such training in the fundamental principles of the English and American law as will thoroughly prepare the student to practice his profession with credit in any state or country where this law prevails.

The course of study occupies the student three years of nine months each, and is so arranged as to require a minimum of fifteen hours of actual recitations and lectures each week from each class. The prescribed course comprises the subjects that follow:

FIRST YEAR.

1. Civil Procedure at Common Law. Professor Fleming.
   Martin on Civil Procedure; Keen's cases.

2. Criminal Law and Procedure. Professor Reed.
   May's Criminal Law; Chapin's Cases.
   Lectures at appointed hours by Mr. Harry S. Silverstein.

3. Constitutional History of England. Professor Willard.

4. Contracts. Professor Pease.
   Hammon on Contracts, and selected cases.

5. Elementary Law. Professor Pease.
   Blackstone's Commentaries; Clark's Elementary Law.

6. Personal Property. Professor Reed.
   Shouler on Personal Property.

7. Political and Constitutional History of the United States.
   Professor Willard.

8. Real Property. Professor Pease.
   Tiffany on Real Property; Blackstone.

9. Torts. Professor Reed.
   Cooley on Torts; Burdick's Cases on Torts.

SECOND YEAR.

1. Agency. Professor Fleming.
   Huffcutt's Cases on Agency, 2nd Edition.

2. Bailments and Carriers. Mr. Fred G. Folsom.
   Hale on Bailments and Carriers.
   Selected and Colorado Cases.

3. Bills and Notes. Professor Reed.
Bigelow on Bills and Notes; Bigelow's Cases on the Law of Bills, Notes and Checks; Colorado Negotiable Instruments Law.

4. Civil Procedure Under the Code. Professor Van Cise and Mr. Cæsar A. Roberts.
Colorado Code of Civil Procedure and Selected Cases. Lectures also at appointed hours.

5. Damages. Professor Reed.
Sedgwick's Elements of Damages.

6. Domestic Relations. Professor Reed.
Woodruff's Cases on Domestic Relations.

7. Evidence. Professor Pease.
Hughes on Evidence; Thayer's Cases on Evidence.
Lectures also delivered on this subject by Mr. Charles S. Thomas.

8. Equity Jurisdiction. Professor Pease.
Bispham's Principles of Equity and Selected Cases.

9. Equity Pleading and Practice. Professor Pease.
Fletcher's Equity Pleading and Practice.

10. Pleading and Practice Under the Code. Mr. Fred G. Folsom.
This course covers the work in the Practice Court described below.

11. Real Property. Professor Pease.
Gray's Cases on Property.
Tiffany on Real Property.

12. Quasi-Contracts. Professor Reed.
Selected Cases.

THIRD YEAR.

1. Appellate Practice. Mr. Ernest L. Williams.
Lectures at appointed hours; illustrative cases.

2. Bankruptcy. Mr. John E. Robinson.
Lectures and Selected Cases.

3. Brief Making and Use of Law Books. Mr. Fred G. Folsom.
   Covers work in Practice Court mentioned below.

4. Common Law Pleading. Mr. Hugh Butler.
   Lectures at appointed hours.

5. Constitutional Law. Professor Fleming.
   Constitutional Law in U. S., McClain; McClain's Cases, 2d Edition.
   Also lectures at appointed hours by Judge Hallett.

6. Conflict of Laws. Professor Fleming.
   Minor's Conflict of Laws; selected cases.

7. Conveyancing and Abstracts of Title. Professor Pease.
   Lectures at appointed hours, supplemented by actual work in title searching in County Recorder's Office.

8. Corporations. Professor Reed.
   Warren's Cases on Private Corporations.
   Lectures on Private and Municipal Corporations at appointed hours by Hon. John Campbell.

9. Extraordinary Remedies. Professor Van Cise.
   Colorado Code Civil Procedure. Selected cases.

10. International Law. Hon. John A. Riner.
    Lectures at appointed hours.

11. Insurance. Professor Fleming.
    Lectures at appointed hours. Illustrative cases.

12. Irrigation, Water Rights and Riparian Privileges. Professor Fleming.
    Mills' Irrigation Manual.
    Mr. James W. McCreery lectures at appointed hours.

13. Legal Ethics. Hon. John A. Riner.
    Lectures at appointed hours.

14. Medical Jurisprudence. Dr. Willard J. White.
    Lectures at appointed hours.

15. Mental Alienation.
    Lectures at appointed hours.

16. Mines and Mining. Professor Bryant and Professor Fleming.
Selected cases; Morrison's Mining Rights. Mr. Robert S. Morrison lectures at appointed hours.

17. Municipal Corporations. Professor Reed.
Smith's Cases on Municipal Corporations.

18. Partnership. Professor Reed.
Mechem on Partnership.

19. Pleading and Practice Under the Code. Mr. Fred G. Folsom.
This course covers the work in the Practice Court described below.

20. Real Property. Professor Pease.
Gray's Cases on Property; Tiffany on Real Property.

21. Roman Law. Mr. Lucius M. Cuthbert.
Lectures at appointed hours.

22. Sales. Professor Fleming.
Williston's Cases on Sales of Personal Property. 2d Edition.

23. Taxation. Mr. Charles D. Hayt.
Lectures at appointed hours.

24. Trusts. Professor Van Cise.
Selected Cases.

25. Wills, Executors and Administrators. Professor Fleming.
Costigan's Cases on Wills; Colorado Wills and Administration Act 1903, and selected cases.

TEACHING PRACTICE

The transfer of legal education from the office to the law school has been marked by a great gain in thoroughness and fullness. But the loss of the training in practice afforded by the business of the office is much to be regretted. It provided the student a sort of law clinic, the want of which must now be supplied by the law school if his legal education is to be complete. He must not only be taught the principles of procedure in all its branches, jurisdiction, pleading, evidence, trial and appellate relief, but he should see these principles in actual practical application. To some extent he may do this by attendance upon the courts and close observation and study of the proceedings there. But, beside being a silent spec-

tator in public courts, the student should have a court of his own, where he may devise remedies, sue out process, draw pleadings, prepare instructions, make briefs and argue questions of law—and perhaps of fact—frame record entries, save exceptions, and preserve them in the record, and take the case up on error, or by appeal. To supply this need, the Regents of the University have authorized a Practice Court, presided over by a Professor of Practice. A court room, including a Clerk's office, has been provided; and the records and files are kept and the proceedings of the court conducted in conformity with usage and practice in the District Courts in Colorado.

The following, briefly stated, is the course of procedure. The Second-Year Class and Third-Year Class are divided into groups of four students; to each group is assigned a carefully prepared case, the facts of which are so stated as, when properly pleaded, to present an issue of law; two of the group are counsel for plaintiff and two for defendant. Counsel for plaintiff devise the remedy, sue out process, superintend its proper service and draw the complaint. Defendant's counsel may demur, move to strike out, or to make more definite and certain, or to quash the process, or plead, as they see fit. Every step, however, is subject to the supervision of the Professor of Practice, and he may require errors to be corrected at once, or leave them in his discretion, to the attention of the opposing counsel. Every record entry occasioned by any step taken by counsel must be drafted by them and submitted to the clerk. He requires the correction of any error or insufficiency, and the entry is then made upon the record by a deputy clerk, selected from the students. When the case is at issue, it is set for trial, or hearing before the Professor of Practice sitting as Judge of the Practice Court. In proper cases appeal is allowed to a court specially organized for the purpose.

It is intended that each student shall participate in the conduct to final judgment, of at least three cases, in each of the second and third years of his course.

INSTRUCTION IN OTHER DEPARTMENTS OF THE UNIVERSITY

The instruction given in other departments of the University is open also to students of the Law School, subject to the approval

of the law faculty. Among the numerous courses, those upon Political Economy, Geology, Mineralogy, History, Oratory and Debate, are particularly recommended for law students.

THE LIBRARY

The University Library, open to students of all departments, contains 61,030 bound volumes.

The Law Library contains several sets of English and American reports, the Reporter System, the digests, including the Century Digest, and a well-selected collection of text-books, and is increased each year under special appropriations by the Regents for that purpose. Several of the leading law journals, American and English, are regularly taken and are on file.

The students of the Law School, although they will not be allowed to take books from the law library of the Supreme Court of the State, at Denver, will be allowed free access during hours when the library is open.

The members of the Boulder bar have generously granted the use of their libraries to the students of the School.

THE C. I. THOMSON COLLECTION.

An accession of one thousand volumes, chiefly reports, from the library of the late Judge C. I. Thomson, the gift of his widow, has been lately made to the law library. The volumes are known and catalogued as the "C. I. Thomson Collection."

FEES

Students pay an annual tuition fee of $50.

ADDITIONAL INFORMATION

For further information inquire of

JOHN D. FLEMING,
Dean, Colorado School of Law.
Boulder, Colorado.

SUMMER SESSION

The ninth Summer Session opens June 24 and closes August 3, 1912.

Instruction by specialists will be given in all collegiate departments.

Besides the advantages of the formal courses, open lectures of general and special interest will be given during the summer session.

The faculty will consist of regular members of the University staff and professors from other institutions of equal rank. The standard of the work will be the same as that maintained during the regular academic year, and credits toward a degree will be given for courses satisfactorily completed.

A fee of $10 will be charged for a single course, and $15 for two or three courses.

Full information regarding the summer work is published in the regular Summer Session Bulletin. For this apply to the Secretary of the University, Boulder, Colorado.

CATALOGUE OF STUDENTS

GRADUATE SCHOOL

NAME. UNIVERSITY RESIDENCE.

Aurand, Harry Albert.....Denver.....1155 13th St.
Geology.

Bell, Cleophile, B.A., M.A.....Boulder.....1931 Hill St.
University of Colorado, 1908, 1909.
Literature, German.

Bliss, Frederick Van Ostrand, B.S (E.E.)..Boulder....2431 Hill St.
University of Colorado, 1907.
Mathematics, Physics.

Boswell, Fannie Judith, B.A., M.A.....Boulder.....1040 11th St.
University of Colorado, 1910.
Literature.

Brackett, William Raymond, B.A.....Boulder.....2455 12th St.
University of Colorado, 1905.
Electricity, Mechanical Engineering, Physics.

Brown, Frank Logan, B.S. (C.E.)....Boulder.....1204 Pleasant St.
University of Colorado, 1911.
Civil Engineering, Transportation.

Butters, Roy Morrill, B.A., M.A.....Denver.....1083 13th St.
University of Colorado, 1909, 1911.
Petrology, Mineral Water Analysis.

Carey, Harriet Elizabeth.....Denver.....1121 13th St.
Romance Languages, Education.

Carhart, Margaret Sprague, Ph.B., M.A....Boulder....1061 14th St.
University of Michigan, 1899, 1901.
Dramatic Literature, Rhetoric.

Cooper, Elva, B.A., M.A.....Boulder.....1041 Grand View Ave.
University of Wisconsin, 1904, 1906.
Mathematics.

NAME. UNIVERSITY RESIDENCE.

Curtis, Harry Alfred, B.S. (Ch.E.), M.A..Boulder..975 Pleasant St.
University of Colorado, 1908, 1910.
Chemistry, Physics, Mathematics.

Curtis, Irene, Hall, B.A.....Boulder.....975 Pleasant St.
University of Colorado, 1908.
Literature.

Dalrymple, Harriette Viletta, B.A., Ph.B....Oblong, Ill.
Greenville College, 1907, 1911. Woman's Cottage
Economics, Education, History.

Davis, William Guy, L.I., B.A., M.A...De Funiak Springs, Fla...
....1634 Walnut St.
Peabody Normal, 1900; University of Nashville,
1901; Yale, 1909.
Latin, German.

Dean, Paul Marshall, B.A., M.A..Denver....1045 Pennsylvania Ave.
University of Colorado, 1908, 1911.
Chemistry, Physics, Mathematics.

DeVoss, J. Clarence, B.A.....Boulder.....1327 6th St.
University of Colorado, 1911.
Psychology, Education, Philosophy.

Dierstein, Arthur Lewis, B.S. (C.E.)....Leadville.
University of Colorado, 1911.
Civil Engineering.

Duff, Carl Mathias, B.S. (C.E.).....Boulder.....1045 Regent St.
University of Colorado, 1910.
Mathematics, Civil Engineering.

Dunklee, Edward Vaughan, B.A.....Denver.....1105 11th St.
University of Colorado, 1911.
Psychology.

Dyer, Eloie Churchell, B.A....Boulder.....417 Mapleton Ave.
University of Colorado, 1911.
History, Economics, Literature.

Edgecomb, Rex E., B.S. (C.E.)....Omaha, Neb....Men's Dormitory
Iowa State College, 1911.
Civil Engineering.

Edwards, Eva Sara, B.A.....Boulder.....1453 12th St.
University of Colorado, 1907.
Romance Languages, Latin, Education.

NAME. UNIVERSITY RESIDENCE.

Elder, Mary Esther.....Boulder.....1075 12th St.
Botany, Biology.

Ellis, Erl Hubert, B.A.....Denver.....1120 10th St.
University of Colorado, 1910.
Mathematics, Physics.

Epperson, Nellie Marie, B.A.....Aspen.....1216 College Ave.
University of Colorado, 1910.
Education, Psychology.

Fawcett, Charles De Van, B.S. (E.E.)..Boulder....1515 Marine St.
University of Colorado, 1911.
Electrical Engineering.

Fertig, Jerome Henry, B.S. (C.E.)....Montrose.
University of Colorado, 1903.
Civil Engineering.

Field, Georgia Louise, B.A., M.A...Hillsboro, Mass.....792 14th St.
Smith College, 1903; University of Colorado, 1909.
Literature, Anglo Saxon.

Fitterer, John Conrad, B.Sc., B.S. (C.E.)....Laramie, Wyo.
Ohio State University, 1898; University of Colorado, 1904.
Civil Engineering.

Foster, Faith Estelle.....Boulder.....897 15th St.
Literature.

Gates, Mabel Eleanor.....Monte Vista.....1061 12th St.
Literature, German.

Gay, George Inness, B.S. (C.E.).....Berkeley, Cal.
University of Colorado, 1909.
Civil Engineering.

Grant, Anna May, B.A.....Boulder.....1818 16th St.
University of Colorado, 1902.
Philosophy, Greek.

Greenen, Lena Weber, B.A.....Boulder.....1165 Broadway
State University of Iowa, 1909.
German, Literature.

Habermann, Caroline Louise, B.A.....Boulder.....568 Marine St.
University of Colorado, 1911.
German.

NAME. UNIVERSITY RESIDENCE.

Halstead, Ruby, B.S.....Kirkpatrick, Ind.....1117 Pine St.
Purdue University, 1905.
English Literature, Philosophy.

Hazlitt, Victoria Henrietta, B.A....London, England.
University of London, 1910. Seven Gables
Education, Psychology, Sociology.

Hellems, Hortense Whiteley, B.A.....Boulder.....1162 12th St.
University of Colorado, 1891.
Latin.

Hough, Gladys.....Englewood.....1139 12th St.
German, Literature, Ethics.

Houston, Robert Bruce, B.S (C.E.)..Kansas City, Mo.
University of Colorado, 1909.
Civil Engineering.

Hunting, Bertha Harriet, B.A.....Boulder.....2213 Hill St.
University of Colorado, 1910.
Literature, Psychology.

Huntington, Whitney Clark, B.S. (C.E.)..Denver..1210 Pleasant St.
University of Colorado, 1910.
Civil Engineering, Physics.

Jackson, Bethell Howard, M.E., M.A....Boulder.....1036 14th St.
Stevens Institute, 1895; University of Colorado, 1906.
Geology, Petrography, Chemistry.

Johnson, Ida Margaret, B.A....Colorado Springs.....1145 13th St.
Colorado College, 1909.
Romance Languages, German, Greek.

Johnston, Alexander Laughlin, B.S. (E.E.)..State College, Pa.
University of Colorado, 1911.
Electrical Engineering.

Jones, Easley Stephen, B.A., M.A.....Boulder.....987 15th St.
University of Colorado, 1907, 1909.
Literature, English, Philosophy.

Kendall, Claribel.....Boulder.....1045 14th St.
Mathematics, Literature.

Knoettge, Carl Harmon, B.A., B.S. (C.E.), Chicago, Ill.
University of Colorado, 1907, 1910.
Civil Engineering.

NAME. UNIVERSITY RESIDENCE.

Lovelace, Walter Sharp, B.A.....Boulder.....1040 10th St.
University of Colorado, 1911.
Economics, Law.

McCarthy, Daniel Thaddeus.....Denver.....1067 13th St.
Physics, Chemistry.

McCaslin, Herbert Ditmars, B.S. (M.E.)..Franklin, Ind.
Purdue University, 1904. 932 Lincoln Place
Engineering.

McFayden, Donald, B.A. M.A., S.T.B.....Boulder.....810 14th St.
University of Toronto, 1896; Harvard University,
1901; Andover Theological Seminary, 1904.
European History.

McKenzie, Pauline Griswold.....Boulder.....809 Pine St.
Literature, Psychology.

Martin, Esther Storey.....Victor.....1162 12th St.
History, Literature, Philosophy.

Morgan, Newlin Dolbey, B.S. (C.E.)....Denver.
University of Colorado, 1910.
Civil Engineering.

Morrill, Joseph Bradley, B.S. (E.E.)....Golden.
University of Colorado, 1910.
Electrical Engineering.

Morris, Anna Belle.....Boulder.....960 Regent St.
Literature, English.

Morse, Florence May, B.A....Kimberly, Idaho....1216 College Ave.
University of Colorado, 1910.
Education, Psychology.

Mosley, Herbert Richard.....Denver.....1155 13th St.
Chemistry, Geology.

Moys, May Adelaide, B.A.....Boulder.....421 Pine St.
University of Colorado, 1911.
Greek, Latin, Literature.

Park, Margaret Marion, B.A.....Longmont.....1216 College Ave.
Smith College, 1910.
Education, German.

Parrish, Gail Hamilton.....Lamar.....1165 12th St.
Education, Literature, Spanish.

NAME. UNIVERSITY RESIDENCE.

Pereau, Ralph Warren, B.S (E.E.)....Fort Collins.
University of Colorado, 1906.
Electrical Engineering.

Poe, Charles Franklin, B.A., M.A....Greeley.....Men's Dormitory
University of Colorado, 1911.
Chemistry, Pharmacy.

Pryor, Hugh Clark, B.A.....Spearfish, S. Dak.....1119 Broadway
University of Colorado, 1911.
Education, Psychology, Anatomy.

Reed, Helen Frances, B.Ph.....Denver.....1103 Pine St.
University of Colorado, 1902.
Metaphysics.

Roberts, Abygail Esther, B.A.....Boulder.....1045 Lincoln Place
University of Colorado, 1910.
Psychology.

Rodgers, Jessie, B.A.....Cripple Creek.....1140 Grand View Ave.
University of Colorado, 1908.
Education, Literature, Psychology.

Rohde, Earnest Conrad, B.S. (C.E.)..State Center, Iowa.
University of Colorado, 1911. 1155 13th St.
Civil Engineering, Economics.

Salomon, Carl Emanuel, B.A., M.A...Berthoud...421 Highland Ave.
University of Colorado, 1910, 1911.
Comparative and English Literature.

Schoenwald, Elizabeth.....Cripple Creek.....1133 Pleasant St.
German, History.

Shelledy, Ruth Marguerite, B.A.....Boulder.....987 15th St.
University of Colorado, 1910.
German, History.

Simmering, Siebelt Luke, B.S. (M.E.)..Boulder...935 Lincoln Place
University of Colorado, 1910.
Mechanical Engineering.

Slusser, Horace Greeley, B.A.....Wheaton, Ill.....1107 12th St.
University of Colorado, 1911.
Geology, Chemistry.

Smith, Guy Watson, B.S. (E.E.), M.S..Castle Rock.
University of Colorado, 1908, 1909. 1045 Pennsylvania Ave.
Mathematics.

NAME UNIVERSITY RESIDENCE.

Spaulding, Iva Maude.....Boulder.....1146 Pleasant St.
Psychology.

Steele, William Henderson, B.A.....Boulder.....2045 Walnut St.
Albany College, 1909.
Physics, Mathematics.

Swayne, Josephine Latham, B.A., M.A..Boulder..970 Lincoln Place
University of Missouri, 1880, 1884.
Art Form.

Tilley, Maurine, B.A.....Hamilton, Mo.....1045 Lincoln Place
Mt. Holyoke College, 1908.
German.

Underhill, Olive Lorena, B.Ph.....Pueblo.....1233 Broadway
University of Chicago, 1909.
Philosophy, Literature.

Venables, Raymond Joseph, B.A.....Boulder.....1037 12th St.
University of Colorado, 1910.
History, Law.

Vestal, Arthur Gibson, B.A..Elmhurst, Ill..1045 Pennsylvania Ave.
University of Illinois, 1911.
Botany, Zoology.

Worcester, Dean Amory, B.A.....Boulder.....2439 6th St.
University of Colorado, 1911.
Psychology, Physics.

Worcester, Philip George, B.A., M.A....Boulder.....2439 6th St.
University of Colorado, 1909, 1911.
Geology. —84.

COLLEGE OF LIBERAL ARTS

SENIOR CLASS

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Allison, Vera Ruth McPherson, Kansas.	1165 12th St.
Argue, Lora Boulder.	1832 16th St.
Ashley, June Maud Boulder.	1004 Pleasant St.
Aurand, Harry Albert Denver.	1155 13th St.
Avery, William Watson Lake City.	1075 14th St.
Baker, Alice May Meeker.	1040 11th St.
Batchelder, Leona Melinda Sterling.	1221 University St.
Baum, Ruth Denver.	1044 Pleasant St.
Bearss, Angie B Boulder.	540 Marine St.
Bell, James Washington Boulder.	1931 Hill St.
Beresford, Elizabeth Frances Boulder.	1064 13th St.
Bottum, Margaret Aberdeen, South Dakota.	1165 12th St.
Brown, B. Frank Boulder.	1833 Arapahoe St.
Campbell, Charles Durham Denver.	1107 12th St.
Cannell, Lillian Ethel Boulder.	Woman's Cottage
Carey, Harriet Elizabeth Denver.	1121 13th St.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Charles, Neva Irene Boulder.	1057 13th St.
Clemmons, Maud Bessie Del Norte.	2236 12th St.
Clifford, Ray Ernest Denver.	1210 Pleasant St.
Cochran, Gladys Luella Del Norte.	1139 12th St.
Conrey, Arthur John Fort Collins.	1707 Athens St.
Cooper, Henry Sisson Denver.	1155 13th St.
Craig, Maud Elizabeth Boulder.	1135 Lincoln Place
Curtin, Elma Hope Boulder.	811 Mapleton Ave.
Cuthbertson, Lulu Lee Pueblo.	1061 12th St.
Davidson, Ray Cornie Las Animas.	1204 Pleasant St.
Davies, William Walter, Jr. Delaware, Ohio.	1080 13th St.
Davis, Jessie Anne Fort Collins.	987 15th St.
Deu Pree, Nora Elizabeth.	1135 11th St.
Drake, Helen Frances Pueblo.	1229 13th St.
Elder, Mary Esther Boulder.	1075 12th St.
Farrington, Edith Constance Boulder.	1506 12th St.
Foster, Faith Estelle Boulder.	897 15th St.
Funk, Ilo Clare Concheño, Mexico.	1125 Pleasant St.
Gates, Mabel Eleanor Monte Vista.	1061 12th St.
Goodykoontz, Colin Brummitt Boulder.	1027 10th St.
Gundrum, Richard Warren Denver.	1058 13th St.

NAME AND HOME RESIDENCE. UNIVERSITY RESIDENCE.

Guthrie, Paul Roy.....1053 12th St.
Boulder.

Harsh, Hester Bell.....1061 12th St.
Pueblo.

Hassinger, Wilmette.....1076 12th St.
Denver.

Hills, Roy Owensby.....956 University St.
Boulder.

Hinchman, Fred Kimpton.....1019 14th St.
Denver.

Hollowell, Sallie Zilpha.....1204 College Ave.
Denver.

Hough, Gladys.....1139 12th St.
Englewood.

House, Lewis Clinton.....University Hospital
Bicknell, Indiana.

Hunt, Nell Ethel.....1061 12th St.
Boulder.

Johnson, Florence May.....1061 12th St.
Central City.

Johnson, Hazel Athene.....1209 Pennsylvania Ave.
Pawnee City, Nebraska.

Kansgen, Ada Christena.....810 14th St.
Montrose.

Kayden, Eugene Mark.....Men's Dormitory
Kherson, Russia.

Kendall, Claribel.....1045 14th St.
Boulder.

Kneale, Mildred Hazel.....2043 Arapahoe Ave.
Boulder.

Knuckey, Clyde Thomas.....1820 Grove St.
Lamar.

Lady, William Franklin.....1040 11th St.
Victor.

Lannon, Fannie Mae.....1146 Pleasant St.
Pueblo.

Lee, Robert Emmet.....Men's Domitory
Denver.

Leonard, Eleanor Catherine.....1229 13th St.
Denver.

Lillie, Neva May.....1165 12th St.
Denver.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Lowe, Naamah	1221 University St.
Alamosa.	
Lynch, Elwood Best	1307 College Ave.
Leadville.	
McCarthy, Daniel Thaddeus	1067 13th St.
Denver.	
McCausland, Calla Amelia	1021 10th St.
Denver.	
McKenzie, Pauline Griswold	809 Pine St.
Boulder.	
Mahoney, Margaret	1041 Grand View Ave.
Denver.	
Martin, Alta	994 14th St.
Boulder.	
Martin, Esther Storey	1162 12th St.
Victor.	
Merrill, Georgia Ruth	821 Mapleton Ave.
Boulder.	
Morris, Anna Belle	960 Regent St.
Boulder.	
Morrish, Ross William	1145 Grand View Ave.
Fort Collins.	
Morrison, Marguerite Louise	1036 Grand View Ave.
Grand Junction.	
Morse, Mary	1229 13th St.
Denver.	
Mosher, Jack Marsh	1229 University St.
Greeley.	
Mosley, Herbert Richard	1155 13th St.
Denver.	
Nelson, Kate	1020 15th St.
Boulder.	
Niehans, Rosa Katherine	2305 13th St.
Cripple Creek.	
Noxon, Ella Rose	2303 Arapahoe Ave.
Idaho Springs.	
Odlum, Arnold Asbury	747 9th St.
Boulder.	
Ohlbach, Anna Louise	1044 University St.
Denver.	
O'Rourke, Mary Jane	828 Marine St.
Boulder.	

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Ostrander, Harry Womersley	Men's Dormitory
Golden.	
Parrish, Gail Hamilton	1165 12th St.
Lamar.	
Pierce, Edna	1209 Pennsylvania Ave.
Denver.	
Potter, Mae Elizabeth	1221 University St.
Denver.	
Pulliam, Lula Rice	1521 Euclid Ave.
Loveland.	
Reynolds, Edna Marguerite	1061 12th St.
Denver.	
Rich, Elizabeth Anne	1229 13th St.
Chicago, Illinois.	
Ryals, Mary Helen	1165 12th St.
Denver.	
Salter, Bernice Alma	1061 12th St.
Pueblo.	
Schoenwald, Elizabeth	1133 Pleasant St.
Cripple Creek.	
Schumacher, Herman Joseph	1089 13th St.
Humphrey, Nebraska.	
Seeman, Bernard Johnson	1005 12th St.
Denver.	
Shumate, Ruth Churchill	1221 University St.
Aspen.	
Smith, Iva Pearl	1065 11th St.
Boulder.	
Spaulding, Iva Maude	1146 Pleasant St.
Boulder.	
Sutter, Loe Albright	Sanitarium
Boulder.	
Swain, Elva Charles	1107 13th St.
Boulder.	
Toby, Emma Caroline	1126 Grand View Ave.
Denver.	
Trezise, Elizabeth	1005 Spruce St.
Boulder.	
Trovillion, Beatrice	941 Pearl St.
Boulder.	
Turner, Edna Louise	2213 Pine St.
Boulder.	

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Turney, Vera Faye Loveland.	1035 15th St.
Vaille, Rebecca Whitehill Denver.	1229 13th St.
Varney, Frederick William Denver.	1205 13th St.
Waldo, Agnes Murray Purcell.	1036 14th St.
Waldo, Margaret Ellen Purcell.	1036 14th St.
Wales, Willa Loveland.	970 11th St.
Ward, Marian Menett Leadville.	1703 15th St.
Warner, Esther Mae Fort Morgan.	1221 University St.
Webb, Besse Boulder.	1607 6th St.
Wiggin, Mary Ila Boulder.	1703 15th St.
Wright, Earl Edwin Denver.	1205 13th St.

—111.

JUNIOR CLASS

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Alband, Lillian May Streator, Illinois.	1127 Broadway
Ashley, Glaister Herod Boulder.	1004 Pleasant St.
Ashley, Thomas Cooley Saguache.	1090 13th St.
Baker, Hilton Vaughn Boulder.	University Campus
Barker, Howard Hill Boulder.	1727 Athens St.
Barker, Kathleen Mary Boulder.	648 University St.
Beck, Maud Almyra Boulder.	665 Maxwell Ave.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Bennett, Clifford Hollis Boulder.	1741 Arapahoe Ave.
Boeck, Albert Byron Boise, Idaho.	1105 11th St.
Boeke, Richardt Miles Pavillion, Wyoming.	1210 Pleasant St.
Broughton, Jennie Belle Conway, Kansas.	1567 9th St.
Brown, Ethel Mae Boulder.	953 11th St.
Bunce, Hazel Udine Fruita.	994 14th St.
Burk, Urmal Wilma Boulder.	1038 University St.
Burke, Ruth Genevieve Boulder.	1002 Spruce St.
Butters, Gladys Almeda Denver.	1134 Pleasant St.
Carlson, Minnie Olivia Longmont.	1064 13th St.
Carney, Helen Margaret Boulder.	1019 14th St.
Chase, John Samson Denver.	983 14th St.
Chittenden, Dorothy Boulder.	1229 13th St.
Clark, Grace Edith Cripple Creek.	1044 12th St.
Clinton, Stiles DeWitt Ward.	542 Arapahoe Ave.
Coffman, Olive Elizabeth Malvern, Iowa.	962 Pleasant St.
Conklin, Grace Elma Delta.	1107 13th St.
Cowell, Hazel Grand Junction.	994 14th St.
Dargavel, Gertrude Louise Salida.	1038 University St.
Dawson, Ethel Maud Denver.	1221 University St.
Dean, Marguerite Boulder.	945 University St.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Dean, Willa Agatha Grand Junction.	994 14th St.
Deatherage, Charlaine Paonia.	1638 9th St.
Doughty, Charles Linton, Jr Lamar.	1037 12th St.
Drinkwater, Harold Paul Denver.	1229 University St.
Fair, Evan Albert Chrisman, Illinois.	1537 9th St.
Farrington, Florence Mildred Boulder.	1506 12th St.
Fernald, Hester Boulder.	885 9th St.
Ferris, Adelaide Austin Carthage, Illinois.	1334 Grand View Ave.
Franklin, Electa Victor.	720 Mapleton Ave.
Fraser, Margaret Marie Boulder.	534 Mapleton Ave.
Galligan, Florence Esther Boulder.	928 University St.
Ganson, Rose Elizabeth Idaho Springs.	1934 Pine St.
Gill, Katharine Littleton.	1221 University St.
Gregory, Tessie Edith Pueblo.	1076 12th St.
Groom, Robert John Boulder.	North 26th St.
Groomer, Araminta Alice Valley, New Mexico.	814 Spruce St.
Hadsell, Zeda Myrtle Wildorado, Texas.	1146 Pleasant St.
Hankins, Margaret Marie Boulder.	1606 Pine St.
Hart, Louise Helen Boulder.	720 Mapleton Ave.
Heaton, Ross Leslie Boulder.	1305 17th St.
Hubbard, Mae E. Boulder.	1216 20th St.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Hubbard, Ralph Shawmut, Montana.	1161 11th St.
Johnson, Anna Elvira Berthoud.	1045 14th St.
Johnson, Charles Beattie Shreveport, Louisiana.	1155 13th St.
Johnson, Rudolph R. B. Niwot.	870 12th St.
Kendall, Florence Boulder.	1045 14th St.
Kennedy, Etta Ruth Newmire.	1107 13th St.
Kiker, Grace Boulder.	1435 Spruce St
Kitchen, Ford Spencer, Ohio.	1081 11th St.
Kyle, Estelle Marie Denver.	1221 University St.
Lacy, Louise Rifle.	994 14th St.
Lawrence, Abraham Max Trinidad.	1019 14th St.
Leach, Winthrop Worcester Denver.	1058 13th St.
Lee, Helen May Pueblo.	1076 12th St.
Leslie, Katherine Bower Pueblo.	1229 13th St.
Le Veque, Norma Ebolie Boulder.	1145 13th St.
Lewis, James David Niwot.	University Place
Lightbourn, Willis Baker Central City.	1229 University St.
Livingston, Charlie DeWitt Kent, Ohio.	1130 10th St.
Lowe, Irwin Merrill Glenwood Springs.	1125 Pleasant St.
Martin, Joseph Anthony Trinidad.	Men's Dormitory
Marvin, Cornelius James Denver.	1107 12th St.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Matthews, Anna Hulda	1045 Lincoln Place
Boulder.	
Meikle, Margaret Ellen	928 University St.
Boulder.	
Miller, Earle Brenneman	921 Regent St.
Boulder.	
Miller, Eva Grace	1817 Athens St.
Boulder.	
Mock, Cecil Le Roy	1089 13th St.
Downey, Idaho.	
Morgan, May Gladys	970 11th St.
Canon City.	
Morris, Earl Halstead	1135 Broadway
Farmington, New Mexico.	
Nighswander, Una	1910 Broadway
Boulder.	
Parish, Lottie Belle	1221 University St.
Johnstown.	
Parlapiano, Sam	1121 Pennsylvania St.
Pueblo.	
Place, Edwin Bray	935 10th St.
Boulder.	
Posse, Harriet Adaline	1040 11th St.
Del Norte.	
Powless, Anna Holliday	1405 Arapahoe Ave.
Alma.	
Price, Bertha Marilla	1091 14th St.
Cripple Creek.	
Pulliam, Obie Sue	1521 Euclid Ave.
Loveland.	
Randall, Helena Gloyd	627 Spruce St.
Boulder.	
Rathvon, Nathaniel Peter	1305 Pine St.
Boulder.	
Reath, Sarah Elizabeth	1061 12th St.
Vulcan, Michigan.	
Robbins, Harry William	1005 14th St.
Greeley.	
Rohwer, George Newton	624 Pine St.
Boulder.	
Salberg, Joseph Brenald	North 19th St.
Boulder.	

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Sayre, Leland Stanford Boulder.	980 11th St.
Schmoll, Hazel Margueritte Ward.	1146 Pleasant St.
Scott, Helen Darling Manitou.	1061 12th St.
Shaw, George Hamlin Houlton, Maine.	1205 13th St.
Shute, Ruby Ray Garfield, Utah.	945 Lincoln Place
Simmons, Margery Louise Boulder.	1061 12th St.
Smith, Charlotte Merle Boulder.	1065 11th St.
Smith, Irvetta Mary Longmont.	1146 Pleasant St.
Smith, Margaret Robina Montclair.	1033 14th St.
Smith, Thelma Fowler.	1545 9th St.
Stanley, Ezma Fae Lafayette.	1545 9th St.
Streamer, Lula May Boulder.	2520 Pearl St.
Sutley, Melvin Lockett Center.	1203 Pennsylvania St.
Tarbell, Robert Raymond Saguache.	1090 13th St.
Walker, Eleanor May Denver.	1044 University St.
Wheeler, Kathleen Fisher Greeley.	1165 12th St.
Williams, Frances Edna Elbert.	1044 University St.
Williams, May Elizabeth Leadville.	1129 13th St.
Young, Margaret Colorado Springs.	970 11th St.

—110.

SOPHOMORE CLASS

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Allen, Frank DeWitt Fort Morgan.	1090 13th St.
Allen, May L. Pueblo.	1233 Broadway
Alter, Nellie Marie Brighton.	2336 13th St.
Ames, Fannie Orlina Glenwood, Iowa.	1044 University St.
Anderson, Harry Frederick Denver.	1037 12th St.
Anderson, Mary Katherine Denver.	1134 Pleasant St.
Andrew, Marion Henderson.	1044 University St.
Arasmith, Merle Golden.	1221 University St.
Arnett, Clyde Drumm Boulder.	1153 Pleasant St.
Aughinbaugh, Ruth Boulder.	1335 Grand View Ave.
Bacon, Reginald Reuben Ouray.	1032 13th St.
Bailey, Warner Dunn Denver.	1229 University St.
Ball, Mary Ethel Louisville.	Louisville
Ball, Una Laura Idaho Springs.	1224 Pine St.
Basham, R. Arthur Boulder.	973 14th St.
Bedortha, Luther Eddy Boulder.	1210 Pleasant St.
Belding, Ralph Eagle.	1005 12th St.
Bennett, Rexie Ellen Boulder.	1145 10th St.
Biethan, Frederick Howard Blackfoot, Idaho.	1028 Pleasant St.
Blakey, Susie Boulder.	1067 13th St.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Bluemel, Charles Sidney Rugby, England.	1036 14th St.
Boeke, Lenore Pavillion, Wyoming.	1146 Pleasant St.
Bouslog, John Samuel Boulder.	1537 9th St.
Bowden, Witt Rising Star, Texas.	1125 10th St.
Brewster, Chauncey Bunce Boulder.	838 14th St.
Brigham, Mildred Charlotte Boulder.	720 Pine St.
Brown, Helen Esther Boulder.	1045 12th St.
Brubaker, Catherine June Denver.	1038 University St.
Burke, Maude Estella Boulder.	1002 Spruce St.
Burton, Dorothy Margaret Pueblo.	1061 12th St.
Butler, Mary Denver.	1065 12th St.
Campbell, William Ralph Boulder.	493 Marine St.
Chamberlain, Irma Mary Denver.	1229 13th St.
Chase, Mabel Leonard Boulder.	1018 Pine St.
Chastain, Garvin Dunn Chickasha, Oklahoma.	1229 University St.
Chew, Mary Brand Pueblo.	1221 University St.
Clatworthy, Leah Alice Fort Morgan.	2237 6th St.
Cleveland, Mattie Hope Boulder.	655 12th St.
Cohenour, Leo Bertram Denver.	983 14th St.
Conlin, Rose Catharine Aspen.	969 10th St.
Cornell, Benjamin David Louisville.	Louisville

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Cosgrove, Maud Alice	1005 14th St.
Silver City, New Mexico.	
Cowell, Edward Weir	1210 Pleasant St.
Denver.	
Cowles, James Howard	1210 Pleasant St.
Denver.	
Cox, Altha Mainor	1061 14th St.
Cameron, Missouri.	
Currier, George Bruce	850 14th St.
Grand Junction.	
Currier, Lucius Carpenter	850 14th St.
Grand Junction.	
Daniels, Winifred Claire	1017 Grand View Ave.
Brush.	
Davis, George Clarence	1085 13th St.
Boulder.	
DesBrisay, Anna Mary	2053 Hill St.
Boulder.	
DeWeese, Cama Elizabeth	1567 9th St.
Boulder.	
Dickson, Arthur Jerome	1703 14th St.
Dayton, Wyoming.	
Dixon, Marjorie Adele	1229 13th St.
Denver.	
Eby, Mabel	1204 Pleasant St.
Boulder.	
Echternach, Albert Verne	1005 12th St.
Palisades.	
Eddy, Elise Osgood	1212 College Ave.
Boulder.	
Epperson, Mary Winifred	1216 College Ave.
Aspen.	
Erickson, Maud Elvira	1320 College Ave.
Boulder.	
Faus, Ernestine Kathryn	1443 Spruce St.
Boulder.	
Fisher, Clara Louise	1127 Broadway
Rock Island, Illinois.	
Fiske, Eugene William	Men's Dormitory
Santa Fe, New Mexico.	
Flynn, Vera Jeannette	1129 13th St.
Pueblo.	

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Fonda, Catharine Farrell Boulder.	2135 8th St.
Fowler, Gretchen Rhodehaus Colorado Springs.	1134 Pleasant St.
Frost, Mary Cooper Denver.	1121 13th St.
Fruit, Edna Elaine Aspen.	1629 Water St
Fye, Verna Belle Boulder.	19th St. and Ninth Ave.
Garvey, Thecla Denver.	1521 11th St.
Gilcrest, Dorothy Havens Denver.	1064 13th St.
Gjellum, Arthur Blaine Fowler.	1229 13th St.
Goss, Hazel Stevenson Denver.	1233 Broadway
Greedy, Paul Victor Denver.	1155 13th St.
Greene, Alice Marian Arvada.	1020 10th St.
Groesbeck, Hazel Addie Garner, Iowa.	811 Marine St.
Habermann, Clara Rico.	568 Marine St.
Hammond, Mary Hannah Cripple Creek.	1221 University St.
Hardin, Virginia Denver.	1165 12th St.
Harley, George Townsend Berkeley, California.	1441 12th St.
Harris, Georgia B. Boulder.	921 9th St.
Harris, Robert Fitton Boulder.	1138 12th St.
Harwell, Erwin Lunsford Putnam, Texas.	1165 13th St.
Hawk, Ora M Hamilton, Missouri.	1045 Lincoln Place
Hemberger, Charles Golden.	1085 12th St.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Hendershot, Mary Marguerite Walsenburg.	1233 Broadway
Henningsen, Bertha Clara Pueblo.	1129 13th St.
Hersey, Clarence Batchelder Denver.	1107 12th St.
Hildebrand, Lucille Gertrude Denver.	994 14th St.
Hinds, Norman Ethan Allen Denver.	1113 10th St.
Hollis, Susie Ellen Tulsa, Oklahoma.	1910 South Broadway
Holmburg, Helen Evelyn Grand Junction.	930 14th St.
House, Floyd Nelson Boulder.	1831 Pearl St.
Howe, William Warren Pueblo.	1044 10th St.
Huiskamp, Henry Christian Keokuk, Iowa.	1005 12th St.
Hulburt, Fannie Eliza Palisade.	1376 Athens St.
Hyde, Anna Beth Buffalo Creek.	1133 Pleasant St.
Irwin, William Archibald Denver.	1441 12th St.
Jackson, Wilma Belvidere, Illinois.	1141 11th St.
Johnson, A. Chauncey Eureka, Ohio.	1004 Pleasant St.
Johnson, Frances Denver.	1141 11th St.
Johnson, Lillie Longmont.	1038 University St.
Johnson, Mary Ethel Portland, Oregon.	1153 Pleasant St.
Kabell, Minnie Merle Vernal, Utah.	1033 14th St.
Kaiser, Carl Albert Breckenridge.	1052 12th St.
Keep, Florence Beatrice Denver.	1035 15th St.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Kennicott, Lillian May	R. F. D. No. 3, Box 85 Boulder.
Kinnison, Inez	1410 Hill St. Fort Collins.
Kleff, Irene	1145 13th St. Denver.
Kluss, Mabel Marie	704 Concord Ave. Boulder.
Knowles, Carl Nelson	1120 10th St. Denver.
Knowles, Edward Gillette	1210 Pleasant St. Denver.
Koller, William Wesley	1135 Broadway Denver.
Leatherman, Lee Leasure	1037 12th St. Lamar.
Leavens, Kenyon	1441 12th St. Denver.
Leech, Edward Towner	1441 12th St. Denver.
Lewis, Glenn Francis	1441 12th St. Denver.
Lewis, Shirley Charlette	970 11th St. Denver.
Libby, John Hermiston	1828 Pine St. Boulder.
Lippard, Everett Jarrell	1405 12th St. Salida.
Lovelace, Alice	1040 10th St. Boulder.
Loyd, Stuart Elizabeth	2529 6th St. Boulder.
Lumsden, Will Frank	1155 13th St. Grand Junction.
McClain, Laura Elizabeth	1133 Pleasant St. Sterling.
McClure, Proctor Myers	1135 Broadway Sedalia, Missouri.
McGrath, Florence Kathleen	963 10th St. Boulder.
McLean, Mabel Inez	1044 University St. Idaho Springs.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
McNeil, Gracie May	1844 Hill St.
Boulder.	
Macomber, Harold George	1005 14th St.
Denver.	
Martin, Helen Gertrude	1036 Grand View Ave.
Leadville.	
May, Jessie Elizabeth	838 University St.
Boulder.	
Metcalfe, Clifton Arthur	2043 Pine St.
Boulder.	
Milburn, Verdie Mae	704 Pleasant St.
Boulder.	
Mills, Corwina Rouse	1045 12th St.
Denver.	
Mints, Lloyd Wynn	606 Spruce St.
Boulder.	
Monahan, Julia Aileen	1045 12th St.
Greeley.	
Morrison, Lucile May	1036 Grand View Ave.
Grand Junction.	
Mosley, William Garrison	1354 Arapahoe Ave.
Boulder.	
Nelson, Emil Raymond	1105 11th St.
Longmont.	
Nelson, Marguerite	1020 15th St.
Boulder.	
Nichols, Percy Harold	1703 14th St.
Racine, Wisconsin.	
Olson, Esther Matilda	1040 11th St.
Pueblo.	
Owens, Clyde Meehan	1315 11th St.
Keota.	
Patton, Rosamond Edith	908 10th St.
Goldhill.	
Patton, Ursula	933 Mapleton Ave.
Boulder.	
Paul, Ruth Dunlap	1146 Pleasant St.
Blue Rapids, Kansas.	
Peterson, Elvera	1091 14th St.
Idaho Springs.	
Prosser, Georgiana	1044 12th St.
Cheyenne, Wyoming.	

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Purdy, Sheldon Paul Denver.	973 14th St.
Putnam, Stella Bertha Boulder.	1033 14th St.
Reed, Walter Kellogg Boulder.	2044 Walnut St.
Repetschnig, Emma Jennie Victor.	1107 13th St.
Reynolds, James Price Eaton.	1058 13th St.
Richardson, Wave Marie Pueblo.	1229 13th St.
Rickard, Sarah May Victor.	1107 13th St.
Ridgeway, Arthur Boulder.	1735 Pine St.
Rohwer, Elsie Boulder.	624 Pine St.
Rollman, Minnie Leadville.	1044 Pleasant St.
Rowland, Jay Miller Boulder.	819 Spruce St.
Saal, Rudolph Ernst vom Pasadena, California.	Y. M. C. A.
Sanborn, Ruth Dorothy Boulder.	603 Highland Ave.
Schaedla, Vesta Eleanor Boulder.	639 Mapleton Ave.
Scott, Pauline Denver.	1221 University St.
Selleck, Elizabeth Fay Boulder.	1036 Grand View Ave.
Sherrill, Samuel Burdon Boulder.	1119 Broadway
Slater, Opal Boulder.	803 Marine St.
Smith, Harriett Longmont.	1064 13th St.
Smith, Robert Gunson Montclair.	1121 Pennsylvania St.
Snell, Lolita Boulder.	1117 Pine St.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Sorenson, Helen Caroline	1419 Hill St.
Pueblo.	
Stearns, Robert Lawrence	1210 Pleasant St.
Denver.	
Stein, William Peter	1005 12th St.
Eagle.	
Stevens, Henry Carlisle	1604 Arapahoe St.
Boulder.	
Stillwagon, Nellie	1044 University St.
Glenwood, Iowa.	
Streamer, Charles Walker	2520 Pearl St.
Boulder.	
Strong, Kathryn Elizabeth	1221 University St.
Springfield, Massachusetts.	
Swanson, Victoria	1545 9th St.
Georgetown.	
Swartwood, Harold Poe	1090 13th St.
Waseca, Minnesota.	
Tarkoff, Blossom Marguerite	1141 11th St.
Montrose.	
Templeton, Nelle Ethel	1012 University St.
Boulder.	
Thomas, Grace Erly	1107 13th St.
Kent, Iowa.	
Titus, Esbon Yokum	1515 7th St.
Boulder.	
Tongue, Alberta	1091 14th St.
Stromsburg, Nebraska.	
Tour, Isabelle Sophia	1033 14th St.
Pueblo.	
Trezise, Ethel Irene	1005 Spruce St.
Boulder.	
Truxal, Mary Elizabeth	1044 Pleasant St.
Hoisington, Kansas.	
Turner, Annie Laurie	1146 Pleasant St.
Colorado Springs.	
Ullery, Fred Lee	1441 12th St.
Colorado Springs.	
Vincent, Wendell	1229 University St.
Denver.	
Vivian, Chauncey Higgins	1305 University St.
Golden.	

NAME AND HOME RESIDENCE. UNIVERSITY RESIDENCE.

Waldo, Hubert Devotion.....1036 14th St.
Purcell.
Ward, Paul William Wolff.....1135 Broadway
Pueblo.
Waters, Pattison Albert.....1155 13th St.
Denver.
Westerman, Leslie Conrad.....1155 13th St.
Breckenridge.
Weyerbacher, Leah.....947 University St.
Boulder.
Whitman, Earl Hill.....1229 University St.
Pueblo.
Wright, Zella Muriel.....1158 13th St.
Boulder.
Zahnen, Helena Katherine.....1809 Athens St.
Monte Vista.

—196

FRESHMAN CLASS

NAME AND HOME RESIDENCE. UNIVERSITY RESIDENCE.

Alband, Laura.....1127 Broadway
Streator, Illinois.
Allen, Frank Ernest.....1061 14th St.
Paonia.
Allen, Gladys St. Clair.....1243 Grand View Ave.
Denver.
Allman, Kenneth Fred.....1135 Broadway
Rensselaer, Indiana.
Anderson, Warren Edward.....1083 14th St.
Pensacola, Florida.
Avery, Harriet Augusta.....1075 14th St.
Lake City.
Bacon, Rodney Eldon.....1032 11th St.
Ouray.
Bailey, Mildred Lee.....1127 Broadway
Denver.
Barlow, Howard Dunham.....1155 13th St.
Denver.
Barrett, David Dean.....1600 Hillside Road
Boulder.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Bashor, Minnie Marilla Steamboat Springs.	1146 10th St.
Batchelder, Kathryn Mary Sterling.	1012 University St.
Bell, Alta Rebecca Boulder.	1949 Pearl St.
Bengston, Carl August Longmont.	1703 14th St.
Billings, Carl Mansfield Boulder.	2021 Pine St.
Blake, Noble Ernest Boulder.	1052 12th St.
Bleasdale, John Walter Brush.	1052 12th St.
Boyd, Anne Dickie Saguache.	1233 Broadway
Boyd, Marjorie Saguache.	1233 Broadway
Bracy, Sarah Margaret Boulder.	2512 Bluff St.
Brewster, Edith Navarre Boulder.	838 14th St.
Bridger, Eula Anna Parsons, Kansas.	North 12th St.
Bronson, Don Hamilton, Ohio.	1205 13th St.
Brown, Hattie May Denver.	1121 13th St.
Brown, Nina Audrey Eaton.	1138 Pleasant St.
Bruner, Richard James, Jr Pueblo.	1441 12th St.
Bryden, Irene Ursula Denver.	1344 Grand View Ave.
Buchheit, Kathryn Boulder.	1227 Pine St.
Burns, Robert Martin Olathe.	1703 14th St.
Cain, E. Everett H Hot Springs, South Dakota.	1537 9th St.
Calkins, Musa Montrose.	1141 11th St.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Cameron, Jessie Mary Colorado Springs.	1091 14th St.
Cameron, Margaret Elizabeth Colorado Springs.	1091 14th St.
Campbell, Claude Melnotte Boulder.	522 Pine St.
Campbell, Lloyd Hubbard Boulder.	522 Pine St.
Canter, Mabel Ann Montclair.	1033 14th St.
Carder, Nelva J. H Denver.	1305 17th St.
Carney, Florence Janet Boulder.	1019 14th St.
Casey, Eleanor Susan Boulder.	820 Pine St.
Catlin, Alice Emily Montrose.	1061 14th St.
Chamberlain, Roy Boulder.	1140 10th St.
Champion, Claire Lezenby Arvada.	1127 Broadway
Cheairs, Marcia Hall Sterling.	1012 University St.
Claff, Dina Denver.	1145 13th St.
Clampitt, Hazel Annette Clarendon, Texas.	1127 Broadway
Cleveland, Jeane Beryl Boulder.	655 12th St.
Cole, Christine Agnes Greeley.	1045 12th St.
Cole, Mark Stevens Yampa.	1077 14th St.
Cooper, William Hamilton Denver.	1155 13th St.
Coppinger, Edward Braidon Durango.	1306 Pennsylvania Ave.
Cornelius, Temple Houston Durango.	1300 Pennsylvania Ave.
Cornish, Alice E. L. Montrose.	1086 13th St.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Counts, Hilda	504 Pleasant St.
Boulder.	
Cox, Annie Laurie	1061 14th St.
Cameron, Missouri.	
Crook, Valentine	1209 Pennsylvania Ave.
Glenwood Springs.	
Culver, Edith Helen	1243 Grand View Ave.
Fort Collins.	
Curry, Ben Walker	1083 14th St.
Mobile, Alabama.	
Dawson, Helen Murien	1620 14th St.
Boulder.	
Dawson, Mary Moore	1406 Pine St.
Boulder.	
DesBrisay, Lestock P. W	2053 Hill St.
Boulder.	
Dickson, Ray	1125 Pleasant St.
Glenwood Springs.	
Donovan, John Theodore	1134 13th St.
Longmont.	
Douden, Fonnie Victor	1921 Arapahoe Ave.
Boulder.	
Douden, Paul Alfred	1727 Athens St.
Pueblo.	
Duce, James Terry	1227 High St.
Boulder.	
Dudley, Ruth Margaret	1064 13th St.
Longmont.	
Duff, Neva Lisetta	1045 Regent St.
Versailles, Missouri.	
Duggan, Frederick Francis	1229 University St.
Victor.	
Dunklee, George Kinney	1105 11th St.
Denver.	
Dunklee, Ivah	1143 Broadway
Denver.	
Dunsmoor, Ruth Ethel	1616 18th St.
Boulder.	
Eaton, Rex Carr	1058 13th St.
Greeley.	
Eddy, Adeline Hamilton	1212 College Ave.
Boulder.	

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Eddy, Henrie May	1212 College Ave.
Boulder.	
Elliott, Cecil Lennox	1045 Pennsylvania Ave.
Victor.	
Ellsberg, Sophia	1139 12th St.
Denver.	
Engle, Kenyon Lyle	1155 13th St.
State Center, Iowa.	
Ennis, Louise Anna	1243 Grand View Ave.
Denver.	
Everitt, Mae Mahetable	704 Pleasant St.
Berthoud.	
Fairweather, James James	Men's Dormitory
Chicago, Illinois.	
Fenner, Helen Elizabeth	1229 13th St.
Kansas City, Missouri.	
Ferguson, James Clare	1307 College Ave.
Tipton, Iowa.	
Fisher, Barton, L	1139 12th St.
Boulder.	
Flynn, Marguerite M	994 14th St.
Carbondale.	
Freeman Eva Allen	1091 14th St.
Monte Vista.	
Fritchman, Norris M	1105 11th St.
Boise, Idaho.	
Gammon, Harry A	1203 Pennsylvania Ave.
Ramah.	
Ganson, Clara May	1934 Pine St.
Boulder.	
Gates, Correy	1441 12th St.
Denver.	
Gates, Gertrude Isabel	743 9th St.
Boulder.	
Germann, Walter Harmon	1220 Grand View Ave.
Kanorado, Kansas.	
Giffin, Ruth Geneva	745 Mapleton Ave.
Boulder.	
Gill, Eula Bell	1133 Pleasant St.
Fort Morgan.	
Gill, Xenophon Riley	940 14th St.
Boulder.	

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Gilligan, Nelle Margaret	1045 University St.
Boulder.	
Giss, Selma Marie	Fourth Ave. and East 26th St.
Boulder.	
Glaser, Kenneth Burr	1125 Pleasant St.
Blissfield, Michigan.	
Goodner, Dorothy	970 11th St.
Rocky Ford.	
Grant, Nellie	1041 Grand View Ave.
Denver.	
Grattan, Rachel Stella	1204 College Ave.
Denver.	
Graves, Herman Coddington	1155 13th St.
Canon City.	
Green, Mae Frances	1091 14th St.
Denver.	
Groesbeck, Marjorie Sergel	1125 Grand View Ave.
Boulder.	
Grout, Stella Shields	994 14th St.
Abbey.	
Haddock, Benjamin Henry	28th and Water Sts.
Boulder.	
Hallock, C. Wiles	980 11th St.
Buena Vista.	
Hampton, Canzada Willard	1158 13th St.
Grand Junction.	
Hamsher, Florence Elizabeth	1515 11th St.
Boulder.	
Harrington, Ruth Madaline	1229 13th St.
Leadville.	
Hedbloom, Leonard DeWitt	1118 13th St.
Boulder.	
Henderson, John Wallace	1058 13th St.
Greeley.	
Henshaw, Marl Millett	921 11th St.
Evansville, Indiana.	
Herrick, Myron Collins	1703 14th St.
Gunnison.	
Hoagland, Edgar Allen Poe	Y. M. C. A.
Alamosa.	
Hollis, Anna Edith	1910 S. Broadway
Tulsa, Oklahoma.	

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Holmburg, Frances Estelle Grand Junction.	930 14th St.
Hopkins, Edith Kempton Boulder.	1061 12th St.
Huber, Kirk Tipton, Iowa.	1229 University St.
Hunt, Merritt Gates Boulder.	1137 Pleasant St.
Inman, Lee Bertram Winchester, Indiana.	1129 13th St.
Ireland, Clarence Leo Boulder.	1036 Grant Place
Ivers, Wayne Franklin Loveland.	1129 11th St.
Ivey, Mabel Bertha Boulder.	2233 15th St.
Jackson, John Donald Denver.	1111 Pleasant St.
Jacobs, Charles A Denver.	1229 University St.
James, Dorothy Beryl Brush.	966 10th St.
Johnson, Anna Marie Denver.	1221 University St
Johnston, Edna Moore Manzanola.	1567 9th St.
Jones, Faye Denver.	1139 12th St.
Jones, Helen Victor.	987 15th St.
Kemp, Donald Campbell Boulder.	1655 9th St.
King, A. Dillard Trinidad.	1005 12th St.
King, William Mabry Sterling.	1105 11th St.
Klein, Otto George Walsenburg.	877 Lincoln Place
Klingler, James Herman Boulder.	1040 Mapleton Ave.
Knight, Evelyn Elizabeth Denver.	1247 Grand View Ave.

NAME AND HOME RESIDENCE. UNIVERSITY RESIDENCE.

Lamb, Frances Eugenia.....1153 Pleasant St.
Victor.

Lavington, Leon Edward.....1210 Pleasant St.
Flagler.

Lawrence, Henry Donald.....Men's Dormitory
Sugar Loaf.

Le Cron, Leslie Middlekauff.....1205 13th St.
Denver.

Lee, Frank Charles.....1405 12th St.
Salida.

Lindburg, Earl Richmond.....1320 College Ave.
Stromsberg, Nebraska.

Lindstrom, Mary Elizabeth.....1545 9th St.
Sterling.

Lomax, Walter de Villers.....1155 13th St.
Boulder.

Loughry, Laurence Chester.....1080 13th St.
Monticello, Indiana.

Lovelace, Ruth Bush.....1040 10th St.
Boulder.

Loveless, Josie May.....1014 Regent St.
Clayton, New Mexico.

Luqueer, Fred Augustus.....1205 13th St.
Olathe.

MacDonald, Hazel Marian.....1091 14th St.
Idaho Springs.

MacKibben, Edna.....1038 University St.
Holyoke.

McCann, Reva Irene.....930 14th St.
Boulder.

McCarty, Fabian Foster.....1703 14th St.
Farmington, New Mexico.

McClurg, Alice Matilda.....966 10th St.
Boulder.

McConnell, Marian Blanche.....1140 Portland Place
Boulder.

McDonald, Franklin Joseph.....1300 Pennsylvania Ave.
Leadville.

McGlothlen, Goldie L..... 811 14th St.
Boulder.

McGovern, Margaret Frances.....1091 14th St.
Denver.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
McKee, Patrick John	1125 Pleasant St.
Montrose.	
McKenney, Dwight	1090 13th St.
La Salle.	
McNown, Jane Lucile	1035 15th St.
Manston, Wisconsin.	
McWilliams, Walter Hasson	1703 14th St.
Olathe.	
Macdonald, John Alexander	1300 Pennsylvania Ave.
Key West, Florida.	
Macomber, Kenneth Adams	1005 14th St.
Denver.	
Malone, William Henry, Jr	1045 Pennsylvania Ave.
Denver.	
Martin, Lucye Neal	1162 12th St.
Victor.	
Matthews, George	1065 11th St.
Lamar.	
Matthews, Lillian Ellen	1045 Lincoln Place
Boulder.	
Maxwell, Georgia Edith	1012 University St.
Lemon Grove, California.	
Menig, Albert Robert	1501 12th St.
Denver.	
Miller, Herbert Alonzo	1090 13th St.
Fort Morgan.	
Minowitz, Walter Isadore	1501 12th St.
Denver.	
Montgomery, Mildred	1038 University St.
Belle Plaine, Iowa.	
Morgan, Evelyn	1816 Grove St.
Erie.	
Morley, Katherine Maud	1243 Grand View Ave.
Denver.	
Munroe, Mina Belle	1127 Broadway
Canon City.	
Muth, Karl Ludovic	1165 Broadway
Aguilar.	
Nash, Alice M	1045 14th St.
Silverton.	
Nelson, Stanley C	1165 13th St.
Boulder.	

NAME AND HOME RESIDENCE. UNIVERSITY RESIDENCE.

Netherton, Theodore.....930 14th St.
Boulder.

Newburn, Ruby Marguerite.....1061 11th St.
Colorado Springs.

Nicholson, Helena Treadway.....1333 Pine St.
Boulder.

Noxon, Edith Whitcher.....2303 Arapahoe Ave.
Boulder.

Odlum, Marguerite E.....749 9th St.
Boulder.

Ogle, Arthur Franklin.....1307 College Ave.
Mancos.

Oldland, Gerald Hendricks.....1083 13th St.
Meeker.

Oldland, Walter.....1083 13th St.
Meeker.

Oliver, Alice Prudence.....1344 Grand View Ave.
Boulder.

Olwin, Portia Harper.....963 11th St.
Boulder.

Osler, Raymond Carroll.....1501 12th St.
Boulder.

Patton, John Adam.....933 Mapleton Ave.
Boulder.

Penny, Shirley Louise.....743 Pine St.
Boulder.

Phillips, Katherine Irene.....603 Fifth Ave.
Boulder.

Pierce, Horace Hale.....1205 13th St.
Denver.

Piers, Agnes.....1107 10th St.
Denver.

Plimpton, Robert Scarff.....Seventh Ave. and 10th St.
Salida.

Powars, Frank Gordon.....1131 University St.
Brighton.

Pulliam, Lillian Elizabeth.....1521 Euclid Ave.
Loveland.

Reed, Elsie Edith.....18 First Ave.
Boulder.

Rennie, Gertrude.....1229 12th St.
Denver.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Rice, Elizabeth Clare Montezuma.	2316 South St.
Rice, Florence Irene Denver.	1134 Pleasant St.
Riedesel, Nellie Boulder.	1209 Pennsylvania St.
Roberts, Richard Thomas Denver.	1129 11th St.
Robertson, Mary Elizabeth Boulder.	1080 13th St.
Roe, Edar Bertram Palisade.	1602 Walnut St.
Roe, Glenwood Coblentz Palisade.	1602 Walnut St.
Ross, Edith Ketler Boulder.	1706 Athens St.
Saboe, Grace Matilda Longmont.	1146 Pleasant St.
Samson, Henry Ernest Quinter, Kansas.	University Place
Sandusky, Leah Salida.	1040 11th St.
Saunders, George Jason Denver.	1414 Pearl St.
Scotland, Ruth Cecelia Denver.	1134 Pleasant St.
Scott, Arlie Mary Boulder.	Ninth Ave. and 19th St.
Scott, Emma Myers Denver.	1727 Athens St.
Scovill, Myrtle Elvira Grand Junction.	1546 12th St.
Sewall, Carrie Almira Carbondale.	1145 13th St.
Shattuck, Burtis B. H Boulder.	1605 Hillside Road
Sheehan, William Lawrence Aspen.	1105 11th St.
Sheldon, Maynard Relton Cleveland, Ohio.	972 14th St.
Sibbald, Garth E. W Yampa.	1229 University St.

NAME AND HOME RESIDENCE. UNIVERSITY RESIDENCE.

Simmons, Zula Gordon.....1038 University St.
Littleton.

Simons, Edith.....1035 15th St.
Boulder.

Sloan, William Wesley.....1453 12th St.
Berthoud.

Small, G. Elizabeth.....1165 12th St.
Denver.

Spangler, Henry Roy.....1052 12th St.
Denver.

Spring, Herbert Arthur.....537 Pine St.
Boulder.

Springer, Alice Elizabeth.....1040 11th St.
Fort Collins.

Stidger, Dagmar.....1229 13th St.
Denver.

Stilson, Harold Wyman.....1083 13th St.
Walsenburg.

Stoddard, Edward Olin.....1083 13th St.
Denver.

Subejano, Cipriana.....1109 13th St.
Iloilo, Philippine Islands.

Sullivan, Frances.....1040 11th St.
Salida.

Swartwood, Madeline.....1134 Pleasant St.
Waseca, Minnesota.

Swayne, Ida Loyd.....930 Lincoln Place
Boulder.

Taylor, Edward Earl.....1044 10th St.
Pueblo.

Templeton, Hassell.....1012 University St.
Boulder.

Teplitsky, Catherine.....University Campus
Boulder.

Thomas, Carlisle Rosalie.....844 14th St.
Denver.

Thompson, Joseph Wood.....University Place
Denver.

Thoreau, Henry David.....1107 12th St.
Denver.

Tidball, Irene Louise.....1134 Pleasant St.
Denver.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Tomblin, Ruth Louise Boulder.	2000 Walnut St.
Tuchock, Clara Marie Pueblo.	1065 11th St.
Tuchock, Edna Helen Pueblo.	1065 11th St.
Twitchell, Edith Chaunelle Denver.	1139 12th St.
Tyler, Tessabel Marguerite Boulder.	840 Pearl St.
Vaughan, Stanley Chauncey Cheyenne, Wyoming.	1501 12th St.
Voils, Leone Grand Junction.	930 14th St.
Walker, Vida Almarion Buena Vista.	1044 Pleasant St.
Wallace, Marguerite San Diego, California.	1012 University St.
Wann, Helen Marie Pueblo.	1127 Broadway
Warner, Genevieve Estelle Boulder.	1057 13th St.
Warner, Margaret Elizabeth Boulder.	1057 13th St.
Webb, Helen Manker Boulder.	1607 6th St.
Webster, Bessie Alithea Alamosa.	1044 Pleasant St.
Weidenhammer, DeMor Glenwood Springs.	1121 University St.
Weinberger, Morris William Idaho Springs.	1031 13th St.
White, Edna Ruth La Jara.	1637 Grove St.
Wickert, Carl Joseph Boulder.	828 University St.
Wickert, Marie Ellen Boulder.	828 University St.
Williams, David George Denver.	975 14th St.
Williams, Marjorie Denver.	1145 13th St.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Wilson, Sylvia Eyre	1061 14th St.
Montrose.	
Wolcott, Helen Stanton	1100 10th St.
Denver.	
Woodard, Matilda Louise	1233 Broadway
Saguache.	
Wright, Myron Gilmore	Euclid Ave. and 14th St.
La Veta.	
Young, Ruth Maud	1044 Pleasant St.
Leadville.	
Yowell, John Jasper	1090 13th St.
Denver.	
Zinn, Vivian	861 11th St.
Hawkesville, Ontario, Canada.	
Zorn, Grace Emily	1143 Broadway
Boulder.	

—270

SPECIAL STUDENTS

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Beebe, John Dickson	973 14th St.
Denver.	
Bennett, Rama Virginia	1145 10th St.
Boulder.	
Benway, Carrie Elizabeth	650 Arapahoe Ave.
Boulder.	
Callahan, Phillip S	Boulderado Hotel
Denver.	
Carne, Leslie Thomas	1105 11th St.
Colorado Springs.	
Casaday, Barton Robertson	505 Pine St.
Boulder.	
Coolidge, Eva Cole	875 9th St.
Boulder.	
Curry, Sherman Adams	1121 University St.
Owensboro, Kentucky.	
East, Henry Holland	1058 13th St.
Tonasket, Washington.	
East, James Montgomery	1058 13th St.
Tonasket, Washington.	
Finney, Martha Elizabeth	1139 12th St.
Valparaiso, Indiana.	

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Fowler, Elizabeth M. Colorado Springs.	1134 Pleasant St.
Gill, Wilsie Kate. Boulder.	940 14th St.
Gordon, Amy. Boulder.	1149 12th St.
Greenen, Rose Carmin. Boulder.	1165 Broadway
Hansen, Juliane Grace. Boulder.	576 Marine St.
Johns, Charles Robert. Blaine.	1125 Pleasant St
Johnson, M. Alletta. Boulder.	1089 13th St.
Joiner, Enfield. Talladega, Alabama.	Seven Gables
Kellogg, Joseph Murray. Boulder.	2044 Walnut St.
Kilpatrick, Sarah Josephine. Boulder.	1902 Walnut St.
Klepser, Fred. Weeping Water, Nebraska.	1045 Pennsylvania Ave.
McGuire, Mabel Vaughn. Des Moines, Iowa.	1521 11th St.
McNabb, James Pierson. Carrollton, Illinois.	Boulderado Hotel
McRae, Roy Gabriel. Boulder.	1939 Walnut St.
Mellett, Alethea Louise. Meddleton, Indiana.	1107 13th St.
Merrill, Vida Helen. Mediapolis, Iowa.	1139 12th St.
Peirano, Ruth Rose. Wilson, Kansas.	University Place
Pierson, Leslie B. Kansas City, Missouri.	1501 12th St.
Reeves, E. Conard. Hutchinson, Kansas.	1703 14th St.
Richardson, Dio. Boulder.	1229 13th St.
Ryan, William Bernard. Denver.	1005 12th St.

NAME AND HOME RESIDENCE. UNIVERSITY RESIDENCE.

Skerry, Arthur Wellesley.....1090 13th St.
Denver.

Smith, Robert Nelson.....1155 13th St.
Spokane, Washington.

Soward, Emma Regina.....1809 Athens St.
Creede.

Staub, Walter John.....731 Spruce St.
Thompson, North Dakota.

Waard, Enne de.....930 Lincoln Place
Grypskerk, Holland.

Wang, C. Kungnien.....1140 10th St.
Ottawa, Canada.

—38.

COLLEGE OF ENGINEERING

SENIOR CLASS

NAME AND HOME RESIDENCE.	COURSE.	UNIVERSITY RESIDENCE.
Abel, Richard James Denver.	E.E.	1027 Pennsylvania St.
Accola, Edward Conrad Pueblo.	M.E.	1229 University St.
Blakey, Marcus Austin Boulder.	M.E.	1067 13th St.
Bloch, Marx Georgetown.	C.E.	1501 12th St.
Briggs, Alfred Poyneer Hollywood, California.	Ch.E.	1441 12th St.
Carver, Walter Lewis Steamboat Springs.	E.E.	1107 12th St.
Cragin, Harold Paul Boulder.	Ch.E.	1210 Pleasant St.
Crawford, Ivan Charles Leadville.	C.E.	1131 University St.
Crisman, Clarence Obed Denver.	C.E.	1229 University St.
Day, Calvin Lester Durango.	C.E.	1515 Spruce St.
DesBrisay, George Stephen Boulder.	C.E.	2053 Hill St.
Dodds, Eugene Haddock La Junta.	Ch.E.	1315 11th St.
DuVall, Willet Clinton Fruita.	E.E.	1507 Pine St.
Fraser, Andrew Chauncey Boulder.	E.E.	534 Mapleton Ave.
French, Carson Tracy Denver.	C.E.	1706 Athens St.
Giroux, Carl H Boulder.	E.E.	429 Highland Ave.

NAME AND HOME RESIDENCE.	COURSE.	UNIVERSITY RESIDENCE.
Greenwood, Arthur Irving..... Hotchkiss.	E.E.....	1315 11th St.
Hartman, Warden Nathan..... Longmont.	M.E.....	1105 11th St.
Hull, Robert Harsh..... Denver.	E.E.....	1135 Pennsylvania St.
Huntington, Glen Herbert..... Denver.	C.E.....	1315 11th St.
Kettering, Walter Henry..... Boulder.	E.E.....	2039 Pine St.
Leonard, Lynn Ruliff..... Scottsbluff, Nebraska.	E.E.....	1085 12th St.
Limprecht, Elwood George..... Durango.	M.E.....	1135 11th St.
Lonnecker, George Vye..... Canon City.	E.E.....	877 Lincoln Place
Lummis, Herbert Clare..... Montclair, New Jersey.	C.E.....	1155 13th St.
McGinnis, William Lynn..... Boulder.	C.E.....	497 Arapahoe Ave.
Markley, Walter Raymond..... Montrose.	E.E.....	1029 University St.
Mason, Marion Albert..... Boulder.	E.E.....	925 University St.
Moulton, Victor Channing..... Meeker.	E.E.....	1229 University St.
Mueller, Charles Augustus..... Gunnison.	E.E.....	1027 Pennsylvania St.
Newkirk, Guy St. Clair..... Denver.	C.E.....	1501 12th St.
Phillips, George Burton..... Fruita.	E.E.....	940 14th St.
Pigg, Wilfred Leroy..... Denver.	E.E.....	1058 13th St.
Rachofsky, Oscar Morris ..... Central City.	C.E.....	1014 Spruce St.
Raymond, Harold Newnham.... St. John, New Brunswick.	E.E.....	1205 13th St.
Rich, John Dillon..... Boulder.	C.E.....	Mt. St. Gertrude Academy
Rupp, Harry Kent..... Monument.	C.E.....	877 Lincoln Place

NAME AND HOME RESIDENCE.	COURSE.	UNIVERSITY RESIDENCE.
Skerry, Harry Allen	C.E.	1090 13th St. Denver.
Sproule, Turner Lumley	M.E.	1105 11th St. Eagle.
Twiss, Robert H	E.E.	1507 Pine St. Denver.
Van Gundy, Cecil	C.E.	1122 Pleasant St. Cheyenne, Wyoming.
Warkley, John Croswell	C.E.	1121 University St. Cheyenne, Wyoming.
Wightman, Irving Leslie	E.E.	1205 13th St. Denver.

—43.

JUNIOR CLASS

NAME AND HOME RESIDENCE.	COURSE.	UNIVERSITY RESIDENCE.
Alling, Arthur Rich	C.E.	1125 Pleasant St. Fort Collins.
Armour, Claude Arnett	E.E.	Men's Dormitory Denver.
Barker, Lawrence Ward	C.E.	648 University St. Boulder.
Beresford, Robert Morrison	C.E.	1064 13th St. Boulder.
Blair, Tom Arthur	C.E.	1902 Athens St. Montrose.
Bonner, Clyde Rayburn	C.E.	South Broadway Boulder.
Brace, Porter Hiscock	E.E.	1105 11th St. Denver.
Bradfield, Louis George	M.E.	1105 11th St. Greeley.
Cavers, Robert Lionel Gilbert	E.E.	1135 Pennsylvania Ave. Denver.
Christian, William Jacob	M.E.	1148 11th St. Denver.
Cressingham, Richard Harry	E.E.	Men's Dormitory Denver.
Dahms, Robert Albert	C.E.	1229 University St. Park Rapids, Minnesota.

NAME AND HOME RESIDENCE.	COURSE.	UNIVERSITY RESIDENCE.
Davenport, Neil Emerson..... Salida.	C.E....	.....1131 University St.
Eaton, Albert Budd..... Boulder.	C.E.....	.....1107 12th St.
Elliott, Preston Green..... Boulder.	E.E.....	.....1705 Marine St.
Ellsberg, Harry..... Denver.	C.E.....	.....Men's Dormitory
Eveland, George Harmon..... Boulder.	E.E.....	.....1044 10th St.
Fickes, Leland Stanford..... Sterling.	E.E.....	.....834 Pearl St.
Forsyth, Carl Payne ..... Boulder.	C.E.....	.....2124 Pine St.
Gartland, Frank Joseph..... Denver.	E.E.....	.....1131 University St.
Gleim, Ernest John..... Denver.	E.E.....	.....Men's Dormitory
Glendinning, James Inglis, Jr.. Denver.	M.E.....	.....1307 College Ave.
Hall, John Temple..... Boulder.	E.E.....	.....615 Highland Ave.
Hamsher, John Lewis..... Boulder.	C.E.....	.....1515 11th St.
Hart, Louis Ireland..... Boulder.	M.E.....	.....720 Mapleton Ave.
Hartman, Warren Peter..... Longmont.	M.E.....	.....1105 11th St.
Irish, Willis Luther..... Boulder.	E.E.....	.....1609 Marine St.
Jeffrey, William Maxon..... Boulder.	C.E.....	.....1125 Pine St.
Jones, Leonard Charles..... Boulder.	C.E.....	.....2327 21st St.
Kettle, James Robert Patrick.. Westcliffe.	C.E.....	.....1307 College Ave.
Koenig, Samuel Adolph..... Golden.	E.E.....	.....1135 Pennsylvania Ave.
Lawrence, Abraham Max..... Trinidad.	C.E.....	.....1019 14th St.
Leisten, Henry Paul..... Aspen.	M.E.....	.....1105 11th St.

NAME AND HOME RESIDENCE.	COURSE.	UNIVERSITY RESIDENCE.
List, Alvin Fred. Denver.	E.E.	1148 11th St.
McKinney, Harry David. Pueblo.	E.E.	1027 Pennsylvania St.
Mallory, Walter Frank. Boulder.	M.E.	915 9th St.
O'Connell, William Ward. Georgetown.	C.E.	1501 12th St.
Patterson, Joseph Towne. Denver.	E.E.	1045 Pennsylvania Ave.
Perry, Harry Raymond. Boulder.	M.E.	1720 14th St.
Purmort, George Eli. Salida.	C.E.	1131 University St.
Randell, William Edward. Pueblo.	E.E.	1121 Pennsylvania Ave.
Rehm, Herbert Eugene. Indianapolis, Indiana.	C.E.	1045 Pennsylvania Ave.
Rolfe, Robert Lawrence. Memphis, Tennessee.	C.E.	1315 11th St.
Royce, Clarence Louis. Denver.	C.E.	1107 12th St.
Russell, Austin Phelps. Boulder.	C.E.	846 Pine St.
Rymer, Dana Clyde. Spring Lake, Michigan.	C.E.	1012 14th St.
Sawyer, Arthur Lathrup. Greeley.	C.E.	1085 12th St.
Schwer, Gus Leo. Pueblo.	M.E.	976 Pleasant St.
Short, Clarence Robert. Lime.	C.E.	1121 Pennsylvania Ave.
Steele, Leslie Rodney. Boulder.	Ch.E.	Eighth Ave. and 14th St.
Swift, Frank William. Denver.	E.E.	1131 University St.
Sydow, William. Denver.	E.E.	Men's Dormitory.
Traxler, Harry Walter. Lamar.	C.E.	1122 Pleasant St.
Tregellas, John Leland. Brush.	C.E.	1161 11th St.

NAME AND HOME RESIDENCE.	COURSE.	UNIVERSITY RESIDENCE.
Unger, Max Samuel Florence.	Ch.E	1077 14th St.
Uyeda, Seizo Fukuoka, Japan.	E.E	1112 University St.
Watrous, Wallace Edwin Monte Vista.	E.E	Men's Dormitory.
Wheatley, Walter Hannum Denver.	C.E	1205 13th St.
White, Raymond Merriman Longmont.	M.E	928 University St.
Winter, Boyd Wahl Santa Fe, New Mexico.	E.E	Men's Dormitory.

—60.

SOPHOMORE CLASS

NAME AND HOME RESIDENCE.	COURSE.	UNIVERSITY RESIDENCE.
Baldock, R. Hugh Starkville.	C.E	1148 11th St.
Barrier, Grover Watkin Glenwood Springs.	E.E	2118 13th St.
Beerbower, Louis Dumont Denver.	C.E	1135 Pennsylvania Ave.
Bergheim, Milton Nachman Boulder.	E.E	1313 Pine St.
Bitner, Albert Henry Boulder.	M.E	934 14th St.
Borden, Philip Sheridan Boulder.	E.E	1013 Portland Place.
Bunger, Howard Phelps Edgewater.	C.E	1946 Grove St.
Burton, William Ernest Medicine Lodge, Kansas.	E.E	1029 University St.
Cargo, Robert Wayne Denver.	M.E	1305 17th St.
Clark, Everett Francis Denver.	M.E	972 14th St.
Condit, Harrison Smith Boulder.	E.E	2141 Water St.
Cook, Scofield Richard La Junta.	Ch.E	1005 12th St.

NAME AND HOME RESIDENCE.	COURSE.	UNIVERSITY RESIDENCE.
Copps, Chauncey Stoddard, Boulder.	M.E.	1540 Pine St.
Costello, James Russell, Denver.	C.E.	1325 Grand View Ave.
Coulter, Harold Boyd, St. Louis, Missouri.	M.E.	1155 13th St.
Davis, Joseph Campbell, Sedgwick.	E.E.	2005 Goss St.
De Marais, Albert Edward, Aspen.	Ch.E.	1545 Pearl St.
De Marais, Howard Arthur, Aspen.	Ch.E.	1545 Pearl St.
Doland, James Joseph, Denver.	C.E.	1501 12th St.
Downing, Roderick Lyle, Lamar.	C.E.	Men's Dormitory.
Eckel, Clarence Louis, Denver.	C.E.	Men's Dormitory.
Fallis, Myrlin Stein, Denver.	M.E.	1067 13th St.
Fankhouser, Ernest John, Durango.	M.E.	1090 13th St.
Fiske, Rogers Allen, Santa Fe, New Mexico.	M.E.	Men's Dormitory.
Floyd, Faye Noble, Trinidad.	E.E.	1090 13th St.
Galloway, Gerald Fogarty, Boulder.	C.E.	1232 South 20th St.
Garlinghouse, Albert Frederick, Canon City.	C.E.	1205 13th St.
Giger, Joe, Greeley.	E.E.	1935 Grove St.
Gould, Jack Jabez, Huron, Arizona.	E.E.	1441 12th St.
Griffin, John Homer, Denver.	C.E.	1210 Pleasant St.
Grosshard, Sol, Brooklyn, New York.	E.E.	Y. M. C. A.
Hamilton, William Coulter, Morristown, New Jersey.	C.E.	1045 Pennsylvania Ave.
Hobson, David Anthony, Denver.	E.E.	1229 University St.

NAME AND HOME RESIDENCE.	COURSE.	UNIVERSITY RESIDENCE.
Holzaepfel, Norman R. Palo Alto, California.	C.E.	1154 Broadway
Hubbard, Erle Emerson. Glenwood Springs.	E.E.	1121 University St.
Jesse, August Lawrence. Akron.	Ch.E.	1221 University St.
Jones, Benjamin Franklin. Center.	C.E.	1155 10th St.
Jones, Kirby Viglini. Denver.	C.E.	1027 Pennsylvania Ave.
Kerr, Henry Hamilton. Denver.	E.E.	1221 Pennsylvania Ave.
Lines, George Emery. Salida.	C.E.	1131 University St.
Lopez, Fabian. Calumpit, Philippine Islands.	C.E.	1065 10th St.
Lynch, Charles Ramsdell. Denver.	E.E.	972 14th St.
McEwen, Ralph Glendon. Holyoke.	C.E.	1077 14th St.
McKelvey, Clinton Fiske. Denver.	E.E.	1540 Grove St.
Maires, Lewis Kelsey. Denver.	C.E.	1205 13th St.
Mallory, George Elwood. Boulder.	Ch.E.	College Ave. and 6th St.
Mayne, Earl Leslie. Denver.	C.E.	1005 12th St.
Meyer, Ralph Elwood. Denver.	E.E.	1122 Pleasant St.
Miller, Charles. Sheridan, Wyoming.	E.E.	935 Marine St.
Moreland, Alfred David. Denver.	E.E.	1122 Pleasant St.
Morgan, Nathan Wilson. Denver.	M.E.	904 14th St.
Morris, Earl Silvester. Pueblo.	C.E.	969 Regent St.
Moyle, Matt William. Boulder.	M.E.	2314 Arapahoe Ave.
Nash, Edgar. Coshocton, Ohio.	C.E.	1107 12th St.

NAME AND HOME RESIDENCE.	COURSE.	UNIVERSITY RESIDENCE.
Olin, Joe Cotton Denver.	E.E.	1083 13th St.
Ornauer, Raymond Arthur Denver.	E.E.	Y. M. C. A.
Palmer, Frank Ernest Denver.	E.E.	1426 Pearl St.
Park, John Charles Greeley.	C.E.	1441 12th St.
Pearce, William Rolph Denver.	C.E.	1229 University St.
Pierce, George Denver.	E.E.	1058 13th St.
Redding, Frank Allen Idaho Springs.	E.E.	1501 12th St.
Rockhold, Kenneth Edward Burlington, Iowa.	Ch.E.	485 Arapahoe Ave.
Sells, Charles Harvey Fort Lupton.	C.E.	1155 13th St.
Shattuck, Lucien Hunt Boulder.	C.E.	1605 Hillside Road.
Shugren, Maurice Ulysses Denver.	E.E.	1221 Pennsylvania Ave.
Shuman, George Arnold Rugby, North Dakota.	C.E.	1620 Grove St.
Smith, Paul Vanderlip Colorado Springs.	M.E.	1205 13th St.
Snyder, Clarence Lane Denver.	E.E.	1946 Grove St.
Soderstrom, Carl Axel Denver.	E.E.	1307 College Ave.
Sweitzer, Leonard Edward Delta.	E.E.	1083 13th St.
Taketa, Shiro Hiroshima, Japan.	E.E.	1075 10th St.
Teter, Roy George Fairplay.	C.E.	1131 University St.
Viets, Floyd Harvey Rifle.	E.E.	1155 10th St.
Waterman, Ralph Douglas Denver.	C.E.	1205 13th St.
Weber, Walter Raymond Denver.	C.E.	1441 12th St.

NAME AND HOME RESIDENCE.	COURSE.	UNIVERSITY RESIDENCE.
Wheeler, Frank Dow Sterling, Illinois.	C.E.	University Place.
White, Edward Divine Cripple Creek.	C.E.	1125 Pleasant St.
Wilkinson, Ephraim Bailey Atlanta, Georgia.	C.E.	1135 Pennsylvania Ave.
Worcester, Harold Sidney Victor.	M.E.	1061 11th St.

—79.

*FRESHMAN CLASS

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Amoss, Lindsay V Windsor.	1065 10th St.
Ashley, Rea Earnst Windsor.	1149 12th St.
Baker, Fred Harrison Fort Morgan.	1119 Broadway.
Barner, Roy Francis Pueblo.	1004 Lincoln Place.
Beresford, Lester Treat Boulder.	1064 13th St.
Beverly, Frank Ferdinand Harvard, Nebraska.	1229 University St.
Blossom, Joe Charles Glenwood Springs.	1125 Pleasant St.
Blythe, Samuel Judson Rushville, Missouri.	1537 9th St.
Boring, Maynard McKay Denver.	1414 Pearl St.
Brown, Daniel Arch Boulder.	1833 Arapahoe Ave.
Canfield, Robert Hawthorne Denver.	Men's Dormitory.
Carnahan, Lawrence Barrett Grand Junction.	1131 University St.
Christian, Ben Denver.	1148 11th St.
Conley, John Edward Lafayette.	1220 Grand View Ave.

*Freshman Engineering students are not classified as to course.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Cooke, Stanley Shields	1121 University St.
Denver.	
Davies, William Maurice	1148 11th St.
Trinidad.	
Davis, Arnim Archibald	1129 11th St.
Loveland.	
Davis, Dean Holden	520 Maxwell Ave.
Longmont.	
DeArmond, Zola Robert	1012 University St.
Wray.	
Dinneen, Maurice Arthur	Y. M. C. A.
Cheyenne, Wyoming.	
Dohner, Guy Ketterman	1085 12th St.
Loveland.	
Findlay, Robert William	1501 12th St.
Denver.	
Flack, John Jacob	972 14th St.
Boulder.	
Fleming, Ernest Berry	1112 University St.
Nepton, Kentucky.	
Gates, Irving George	1203 Pennsylvania Ave.
Grand Junction.	
Geltz, Herbert Spencer	Y. M. C. A.
Massillon, Ohio.	
Gilland, Laurence Egbert	1149 12th St.
Denver.	
Glendinning, Edward Wood	1307 College Ave.
Denver.	
Haaf, Edmonds William	1165 13th St.
Brooklyn, New York.	
Harrison, Edward Field	1058 13th St.
Denver.	
Harrison, Horace Lippincott	1052 12th St.
Denver.	
Harvey, Clarence Christopher	2035 8th St.
Boulder.	
Haworth, Paul Walton	2027 Spruce St.
Boulder.	
Henderson, Richard Henry	1220 Grand View Ave.
Boulder.	
Horning, Samuel D	1109 Pine St.
Fruita.	

NAME AND HOME RESIDENCE. UNIVERSITY RESIDENCE.

Hummer, George Earl.....1941 Grove St.
Goldfield.

Joslyn, George Robert.....1917 14th St.
Boulder.

Judelovitz, Sam.....1766 12th St.
Denver.

Kinkaid, Ray Merwin.....1300 Pennsylvania Ave.
Houston, Texas.

Kubota, Masatomo.....1112 University St.
Osaka, Japan.

Lightburn, Luther Martin.....1058 13th St.
Denver.

Lindsay, Richard Wander.....1126 Pearl St.
Denver.

Loupe, Walter Raymond.....854 7th St.
Pueblo.

McCary, Phillip.....1131 University St.
Grand Junction.

McClain, George Washington.....1501 12th St.
Sterling.

McNeil, Elbert K.....P. O. Box 337.
Boulder.

Mann, Clair Victor.....1131 University St.
Boulder.

Martenson, Morris.....Y. M. C. A.
Edgewater.

Martin, Stratton Andrew.....1441 12th St.
Denver.

Martin, William Edgar.....1140 10th St.
Denver.

Means, John Siemon.....1210 Pleasant St.
Denver.

Miller, E. Clifford.....1205 13th St.
Mount Morris, Illinois.

Mitchell, Harry Lacey.....1229 University St.
Denver.

Morgan, Arthur Lenord.....970 11th St.
Canon City.

Murch, Henry Boynton.....1155 13th St.
Denver.

Murphy, James Malcolm.....1203 Pennsylvania Ave.
Grand Junction.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Nakano, Ryotaro Matsuyama, Japan.	1075 10th St.
Nelson, George Andrew Windsor.	1065 10th St.
Nichols, Wylie Livingston Council Bluffs, Iowa.	1441 12th St.
Noble, Raymond Charles Lafayette.	1220 Grand View Ave.
Ohara, Henry Tomoyoshi Tokyo, Japan.	1075 10th St.
Park, Robert Orchard Denver.	1107 12th St.
Parrish, James Benjamin Brighton.	1408 Pearl St.
Patton, Harlan Virgil Senatobia, Mississippi.	973 14th St.
Paul, Lesley Coolidge Denver.	1221 Pennsylvania Ave.
Peterson, Ernest Frederick Greeley.	R. F. D. No. 1, Box 7.
Pratt, Meredith Remick Denver.	1300 Pennsylvania Ave.
Prouty, Frank Harrison Denver.	1210 Pleasant St.
Rader, Cranston Bourquin Denver.	1105 11th St.
Rank, Raymond Childs Boulder.	1929 Walnut St.
Reid, Hugh Applegate Denver.	1421 12th St.
Reinhold, Frederick Eyre Montrose.	1107 12th St.
Richardson, Robert Mark Craig.	929 Marine St.
Robison, Ralph Turner Fort Morgan.	1119 Broadway.
Rothwell, Stephen Gainsford Denver.	1421 12th St.
Savage, Edwin Norman Brighton.	1047 Pearl St.
Sechrist, Loyd E Wray.	1012 University St.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Sharp, Floyd	1104 University St.
Kansas City, Missouri.	
Shenk, Victor Archibald	Y. M. C. A.
Denver.	
Shimeall, Karl Wallace	1220 Grand View Ave.
Goodland, Kansas.	
Shutt, Charles William	1315 11th St.
Fort Collins.	
Sievers, William Oren	1077 14th St.
Denver.	
Simons, Robert William	1035 15th St.
Boulder.	
Slater, Lewis Cecil	803 Marine St.
Boulder.	
Slattery, Paul	1044 10th St.
Pueblo.	
Small, Sidney Smith	1107 12th St.
Denver.	
Smith, Burnsley Davis	1005 12th St.
Denver.	
Stancliff, Thomas Arthur	973 14th St.
Lake Arthur, New Mexico.	
Stumpf, Marion Anton	972 14th St.
New York, New York.	
Sunnergren, Edwin	1305 17th St.
Denver.	
Tebeau, Robert Eugene	Y. M. C. A.
Denver.	
Townsend, Oscar Forest	1808 15th St.
Flora Vista, New Mexico.	
Tracy, Will Aaron	1105 11th St.
Sacramento, California.	
Vallet, Victor Emil	1315 11th St.
Nauvoo, Illinois.	
Victory, Thornton Maltby	Men's Dormitory.
Santa Fe, New Mexico.	
Welch, Oscar Lee	1620 Grove St.
Purcell, Oklahoma.	
Wells, Glenn Alexander	1307 College Ave.
Akron.	
White, Gordon Dennis	1067 13th St.
Denver.	

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Whitney, Earle Sproate Rollinsville.	829 Mapleton Ave.
Whitney, Paul Brooks Denver.	1045 Pennsylvania Ave.
Williams, Arthur Rheaume Golden.	1058 13th St.
Wilson, Morris Spillard Denver.	2330 14th St.
Winner, William Lane, Jr Boulder.	2445 18th St.
Wyley, Elwood L Oxford.	1080 13th St.

—104.

SPECIAL STUDENTS

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Pease, Edward Mitchell Washington, Pennsylvania.	1125 Pleasant St.
Slye, John Dallison Boulder.	Second Ave. and 15th St.

—2.

SCHOOL OF MEDICINE

FOURTH-YEAR CLASS

NAME AND HOME RESIDENCE.	*UNIVERSITY RESIDENCE.
Andrus, Adellon Devilla Ashland, Wisconsin.	1307 Welton St.
Blanchard, Winthrop Eugene Denver.	2501 Franklin St.
Bosworth, Ralph Lyman Denver.	2900 Vine St.
Brady, William R Parsons, Kansas.	1303 Delaware St.
Champlin, Harry Howard Liberty, New York.	1667 Harrison St.
Currigan, Martin Dominic Denver.	2720 Lafayette St.
Davis, Chapman Watson Denver.	860 Munroe St.
Dyer, Wallace Curtis Evansville, Indiana.	1356 Pearl St.
Erich, Augustus Frederick Paonia.	Y. M. C. A.
Evans, Francis Joseph Denver.	4220 Lipan St.
Finnoff, William Chris Denver.	2772 Dunkeld Place
Hanson, Fitch Phelps Big Rapids, Michigan.	1405 Cherokee St.
Henderson, Abby M Denver.	976 Broadway
Hodnett, William Perkins Denver.	2900 Vine St.
Horton, Thomas Clair University Park.	249 Acoma St.

*In Denver.

NAME AND HOME RESIDENCE.	*UNIVERSITY RESIDENCE.
Hubbard, Lamont Arthur Nederland, Texas.	2719 Dunkeld Place
King, Robert Washington Denver.	1514 Court Place
Lewis, William Benjamin Snyder.	3231 Julian St.
Likes, Lanning E Des Moines, Iowa.	1667 Harrison St.
McKenzie, Charles Duncan Denver.	360 Delaware St.
Miller, Samuel Warren, Jr. Denver.	1273 Vine St.
Minato, Kenji Akashi, Japan.	1826 Park Ave.
Mitchell, Luther Ebert Cheyenne, Wyoming.	1112 Ogden St.
Moffett, John Jellison Clinton, Iowa.	1671 Washington St.
Osborn, George E Denver.	215 Wyoming Bldg.
Philpott, James A Denver.	1307 Welton St.
Reiss, Theodore Herzog Denver.	917 Acoma St.
Sheldon, Roy Faust Beatrice, Nebraska.	124 Grant St.
Smith, Erle Fisk Pueblo.	2030 Stout St.
Smith, Eugene B. McDowell, West Virginia.	
Smith, Richard Gilchrist Pueblo.	367 Cherokee St.
Stahl, Arthur William Denver.	3404 Lafayette St.
Strate, Lester Kenneth Hastings, Nebraska.	622 13th St.
Stroud, Reginald J. H Lower Sackville, Nova Scotia.	1307 Welton St.
Sutter, Loe Albright Boulder.	1100 Bannock St.

*In Denver.

NAME AND HOME RESIDENCE. *UNIVERSITY RESIDENCE.

Walker, Thomas Franklin.....1416 Delaware St.
Kokomo.

Waterhouse, John Edward.....1021 East 13th Ave.
New Orleans, Louisiana.

Weber, Frederick Henry.....1100 Bannock St.
Boulder.

Williams, Louis Aloysius.....828 12th St.
Sand Center, Minnesota.

Zimmerman, William.....4134 Osage St.
Denver. —40.

THIRD-YEAR CLASS

NAME AND HOME RESIDENCE. *UNIVERSITY RESIDENCE.

Block, Leon.....1011 17th Ave.
Pueblo.

Burket, Robert Smith.....1245 Clayton St.
Denver.

Cary, Guy Clifton, B. A.,.....2011 Humboldt St.
University of Colorado.
Denver.

Cecchini, Augustine Santini.....566 Logan St.
Denver.

Craner, George Edward.....1203 Glenarm Place
Burley, Idaho.

Cullen, Frederick John, Ph.G.....317 W. 14th Ave.
Kansas City, Missouri.

Darrow, Cecil Howard.....1423 Cherokee St.
Elwood, Indiana.

DeMay, Griffith A.....1303 Delaware St.
Danbury, Nebraska.

DeVries, Albert.....1250 Acoma St.
Denver.

Drinkwater, Ray Laurence.....Belvedere Hotel
Denver.

Eakins, Clemens Franklin.....156 W. 2nd St.
Blakesburg, Iowa.

Fezer, Florence.....252 Lincoln St.
Greeley.

Fitzsimmons, Charles Erasmus.....St. Joseph's Hospital
Denver.

*In Denver.

NAME AND HOME RESIDENCE.	*UNIVERSITY RESIDENCE.
Gwinn, Laurence Miles Victor, Iowa.	1423 Cherokee St.
Haskell, Edward Earle Alexandria, Minnesota.	355 Galapago St.
Heaton, Archibald Burdette, B.S. (E.E.) University of Colorado. Boulder.	1657 Logan St.
Hills, Carl Clifford Boulder.	2400 Washington St.
Hills, Whitford Carl Denver.	1611 Court Place
Hotchkiss, Walter Kendrick Denver.	1901 Lincoln Ave.
James, William D. Denver.	1249 Acoma St.
Kemble, Earl Wallace Golden.	1011 17th St.
Kindall, Lloyd Elmer Paonia.	1446 Clarkson St.
Kindig, Zoe Zita Denver.	300 McPhee Bldg.
LaCroix, Mrs. Ray Kruse Denver.	923 Lipan St.
Luckie, James Buckner Birmingham, Alabama.	1840 Sherman St.
McKell, William Scott Chillicothe, Ohio.	Shirley Hotel
McLauthlin, Carl Addison, B.A. University of Colorado. Denver.	1340 Steele St.
Mitchell, William Earl Vallejo, California.	901 Logan St.
Morse, Roy Adelbert Kimberly, Idaho.	972 Lipan St.
Mugrage, Edward Rossiter, M.A. Denver University. Denver.	2007 E. 22nd Ave.
Nordby, Frederick Jorgen Boise, Idaho.	355 Galapago St.
Newton, Edward Kellan Crown Point, Indiana.	1446 Clarkson St.

*In Denver.

NAME AND HOME RESIDENCE. *UNIVERSITY RESIDENCE.

Passover, Lucy Lloyd.....935 Downing St.
Denver.

Peebler, Ray Earl.....2030 Stout St.
Saltfork, Oklahoma.

Rapp, John Henry.....1446 Clarkson St.
La Junta.

Robb, William John.....1542 Pearl St.
Swanwick, Illinois.

Shea, Robert Macfeely.....St. Anthony's Hospital
Denver.

Shisler, John William.....2030 Stout St.
Miami, Florida.

Stenhouse, Henry Merritt.....2960 Denver Place
Denver.

Stiffler, Martin Luther, B.A.....Golden
University of Colorado.
Golden.

Stuver, Henry William.....Y. M. C. A.
Elgin, Utah.

Swaggart, Luman Birch.....1341 Corona St.
Denver.

Swartz, Fred George.....2720 W. Lake Place
Denver.

Symon, William Gardiner.....3025 W. 25th Ave.
Denver.

Taylor, Ray Robinson, B.A.....841 Logan St.
University of Colorado.
Pueblo.

Vivian, Charles Smiley.....1816 Sherman St.
Denver.

Walker, George S.....1475 Pearl St.
New Haven Connecticut.

Waring, James Johnston.....1145 Race St.
Denver.

Wells, James William, B.A.....1435 Galapago St.
University of Colorado.
Brighton.

Werner, Emil August.....1307 Welton St.
Beecher, Illinois.

Whitmore, David Paul.....915 E. 18th Ave
Denver. —51.

*In Denver.

SECOND-YEAR CLASS

NAME AND HOME RESIDENCE. UNIVERSITY RESIDENCE.

Archibald, Edward Glenn.....1419 Spruce St.
Boulder.

Boeck, Albert Byron.....1105 11th St.
Boise, Idaho.

Chase, John Sampson.....983 14th St.
Denver.

Cooper, Henry Sisson.....1155 13th St.
Denver.

House, Lewis Clinton.....University Hospital
Bicknell, Indiana.

Knuckey, Clyde Thomas.....1820 Grove St.
Lamar.

Kopsciowsky, Anna.....P. O. Box 192
Denver.

Mishkind, Jacob Alfred.....1203 Pennsylvania Ave.
Denver.

Morrish, Ross William.....1145 Grand View Ave.
Fort Collins.

Mosher, Walter Frederic, B.A.....983 14th St.
University of Colorado.
Lansing, Michigan.

Murray, Edward James, B.A.....1325 Grand View Ave.
Holy Cross College.
Pawtucket, Rhode Island.

Norris, Joseph Patrick, B.A.....1073 Lincoln Place
University of Colorado.
Manitou.

Shapiro, Joseph Max.....1766 12th St.
Denver.

Talbot, Robert Emmett.....1205 13th St
Denver.

—14.

FIRST-YEAR CLASS

NAME AND HOME RESIDENCE. UNIVERSITY RESIDENCE.

Arthurton, Robert Nathaniel, B.A.....1354 Arapahoe Ave.
Fisk University.
Denver.

Ashley, Glaister Herod.....1004 Pleasant St.
Boulder.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Atkinson, Ernest Thomas Greeley.	1105 11th St.
Callaway, William Otis, B.A University of Colorado. Boulder.	1129 13th St.
Chambers, Kathrine Lee, B.A. Wesleyan College (Georgia). New York City, New York.	1057 13th St.
Mellette, Florence Josephine Boulder.	1420 Euclid Ave.
Mulvehill, Walter William Denver.	806 Spruce St.
Salberg, Joseph Brenald Boulder.	North 19th St.
Savage, Joseph Carr Denver.	1205 13th St.
St. Clair, Charles A., B.A Austin College. Boulder.	1614 Walnut St.
Woods, James Edward York, Nebraska.	Boulderado Hotel —11.

PHARMACY STUDENTS

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Roberts, J. Lewis Idaho Springs.	983 14th St.
Rosenblum, Arnim Nathan Pueblo.	1703 14th St. —2.

SCHOOL OF LAW

THIRD-YEAR CLASS

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Anderson, Ralph Justin Kinderhook, Illinois.	952 Marine St.
Bliss, Charles Nelson Boulder.	2431 Hill St.
Bottum, Frank Aberdeen, South Dakota.	1335 Grand View Ave.
Brinker, Waller Chenault, Jr Boulder.	844 14th St.
Carr, Ralph Lawrence, B.A. University of Colorado. Cripple Creek.	1441 12th St.
Cook, Charles Christopher McLean, Texas.	Men's Dormitory
Davis, Fred W. Seattle, Washington.	1005 12th St.
Delaney, Frank Leo Meeker.	Men's Dormitory
Ellis, Erl Hubert, B.A. University of Colorado. Denver.	1120 10th St.
Hagen, Frederick Eugene, B.A. University of Colorado. Boulder.	Men's Dormitory
Hinman, Willis Rexford Mt. Vernon, Washington.	Seven Gables
Killgore, John Perry Fort Collins.	1134 13th St.
Kimbrough, George Francis Denver.	1335 Grand View Ave.
King, Gordon Worthington Villa Grove.	969 Regent St.
LeVeque, Grant Claudius Boulder.	1145 13th St.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Lichty, Carl Tobias, B.A. University of Colorado. Bethlehem, Pennsylvania.	1090 13th St.
O'Brien, Robert Rolland. Denver.	1229 University St.
O'Rourke, John Bernard. Boulder.	828 Marine St.
Parrish, John Festus, B.A. University of Colorado. Lamar.	1335 Grand View Ave.
Pierrot, Adolph George, Ph.B. University of Chicago. Chicago, Illinois.	1511 12th St.
Tanton, Ray George. Salida.	1131 University St.
Venables, Raymond Joseph, B.A. University of Colorado. Boulder.	1037 12th St.
Wilson, Oliver Chester, B.A. University of Colorado. Denver.	1155 13th St.

—23.

SECOND-YEAR CLASS

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Andrus, Ralph Roscoe. Denver.	1205 13th St.
Bond, Eugene Alva. Royston, Georgia.	1155 13th St.
Cook, Harry Earnest. Boulder.	1005 Lincoln Place
Crawford, Paul William. Pueblo.	1300 Pennsylvania Ave.
Crouter, Errol Louis Edgerton. Wheatland, Wyoming.	1205 13th St.
Culver, George Warren, B.A. University of Colorado. Fort Collins.	1105 11th St.
Drinkwater, Russell Robert. Denver.	1229 University St.
Dunklee, Edward Vaughan, B.A. University of Colorado. Denver.	1105 11th St.

NAME AND HOME RESIDENCE. UNIVERSITY RESIDENCE.

Elwell, Lyman Timothy.....1441 12th St.
Pueblo.

Fink, Frank Geoffrey.....1058 13th St.
Montrose.

Freeman, Boyd.....University Place
Denver.

Giacomini, Lawrence George, B.A.....1131 University St.
University of Colorado.
Sterling.

Heit, Ezra Selleck.....Men's Dormitory
Clyde, New York.

Jones, Charles Crockett.....1203 Pennsylvania Ave.
Flagstaff, Arizona.

Kabell, Louis, Jr.....952 Marine St.
Vernal, Utah.

Kelly, Leo Patrick.....1229 University St.
Pueblo.

Kemp, Frank Alexander, Jr.....1210 Pleasant St.
Denver.

Kubeck, Ernest James.....Y. M. C. A.
Horton, Kansas.

Lannon, John Albert.....1441 12th St.
Pueblo.

McClelland, James Robert.....1205 13th St.
Idaho Springs.

McFadden, John Francis.....1105 11th St.
Canon City.

Millikin, Eugene Donald.....1058 13th St.
Hamilton, Ohio.

Mills, Jared Warner, Jr., B.A.....1229 University St.
University of Colorado.
Denver.

Montgomery, Victor Adna, B.A.....27th and Walnut Sts.
University of Colorado.
Boulder.

Morris, Robert Charles.....969 Regent St.
Pueblo.

Odlum, Arnold Asbury.....747 9th St.
Boulder.

Olmstead, Albert William, B.A.....Boulderado Hotel
Greenville College.
Los Angeles, California.

NAME AND HOME RESIDENCE. UNIVERSITY RESIDENCE.

Parrish, Jay Megran.....1205 13th St.
Kearney, Nebraska.

Payne, Ira Daniel.....1620 Grove St.
Loveland.

Pine, Frederick Walter.....1300 Pennsylvania Ave
Miami, Florida.

Rigby, Charles Percy.....1135 Pennsylvania Ave.
Meeker.

Storer, Todd Clement, B.A.....Men's Dormitory
University of Colorado
Pueblo.

Strever, William John.....2531 5th St.
Boulder.

Swain, George Warner.....1090 13th St.
Chicago, Illinois.

Valdez, Antonio Jose Nerio.....952 Marine St.
Del Norte.

—35.

FIRST-YEAR CLASS.

NAME AND HOME RESIDENCE. UNIVERSITY RESIDENCE.

Atkinson, John Owen.....Y. M. C. A.
Montrose.

Bagley, Daniel Austin.....Men's Dormitory.
Pueblo.

Bonner, Beryl Mary.....1134 Pleasant St.
Leadville.

Brodsky, Josef.....1501 12th St.
Denver.

Bryant, Emmet Earl.....1203 Pennsylvania Ave.
Montrose.

Cadwallader, Roy Louis.....877 Lincoln Place.
Des Moines, Iowa.

Carlson, Milton.....1090 13th St.
Masters.

Cole, Thomas Jefferson.....921 Regent St.
Joplin, Missouri.

Divisek, Frank Otto.....1441 12th St.
Cedar Rapids, Iowa.

Dolan, Frank Fleming.....Y. M. C. A.
Montrose.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Egger, Fritz Reef Bayfield.	1703 14th St.
Ferguson, John Duncan Stoneham.	Y. M. C. A.
Fitch, Paul Raymond Sterling.	1105 11th St.
Giorgetta, Hercules Albert Dolores.	1083 13th St.
Girling, Jack Robert Colorado Springs.	1210 Pleasant St.
Gundrum, Richard Warren Denver.	1058 13th St.
Haeberle, Frederick Edward Denver.	Men's Dormitory.
Heckman, Scott William Grand Junction.	1131 University St.
Hesseck, Delbert Alexander Florence.	1307 College Ave.
Hooker, Oliver Wolcott Hayden.	877 Lincoln Place.
Hulmes, Alfred Willard Independence, Missouri.	1005 12th St.
Hutchinson, Dudley Isom Oxford, Mississippi.	1204 Pleasant St.
Johnson, Earl Russell Denver.	1125 Pleasant St.
Johnson, Eric Berthoud.	1453 12th St.
Keating, Herbert Edward Sterling.	1501 12th St.
Kennedy, Kenneth Adams Denver.	1229 University St.
Kingsland, Edwin Russell Denver.	1210 Pleasant St.
Lavan, Harry Mark Cleveland, Ohio.	1121 University St.
Lewis, Ralph H New Windsor.	1229 11th St.
Long, Warren Winfred Boulder.	1405 12th St.
Love, Robert Vest Macon, Missouri.	Y. M. C. A.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Luby, William Harold Minturn.	1085 12th St.
Martin, Dean Arthur New Castle, Indiana.	1138 Grand View Ave.
Marvin, Leonard Waldo Boulder.	1044 University St.
Mayne, George Herbert Council Bluffs, Iowa.	1441 12th St.
Miller, Terry John Steamboat Springs.	1058 13th St.
Odlum, Floyd Bostwick Boulder.	747 9th St.
Olmstead, Ray Carroll Chicago, Illinois.	Boulderado Hotel
Parker, Della Leigh Denver.	1327 Arapahoe Ave.
Patterson, Frank Delon, Jr Denver.	1090 13th St.
Pigg, Frank Burton Denver.	1058 13th St.
Rachofsky, David Ezekiel Durango.	Men's Dormitory
Seaman, Herman Wilson Loveland.	950 Marine St.
Schumacher, Herman Joseph Humphrey, Nebraska.	1089 13th St.
Slattery, Frank Earl Silverton.	1134 13th St.
Smith, Amasa Charles Coalport, Pennsylvania.	1521 Marine St.
Smith, Robert James Greeley.	1058 13th St.
Stemen, David Christian Denver.	1205 13th St.
Stone, Clifford Hannibal, B.A University of Colorado. Gunnison.	1090 13th St.
Swerer, George Heber Boulder.	1135 Pennsylvania Ave.
Taylor, Olin Clair Senatobia, Mississippi.	973 14th St.
Thorson, Carlisle John Boulder.	2137 Pine St.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Underhill, Elam B. Collbran.	1719 Water St.
Varney, Frederick William. Denver.	1205 13th St.
Wallace, Willard Wright. Fairplay.	1058 13th St.
White, William Wallace. Craig.	Y. M. C. A.
Williams, Perry Elbridge. Golden.	1161 11th St.
Woodbury, Joseph Francis. Greeley.	1155 13th St.
Wright, Earl Edwin. Denver.	1205 13th St.

—59.

SPECIAL STUDENTS

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Collins, Oscar Orth. Pueblo.	1029 University St.
Funk, Ilo Clare. Concheno, Mexico.	1125 Pleasant St.
Dickson, Marshall John. Fulda, Minnesota.	877 Lincoln Place.
Gentry, Letcher Reeves. Meeker.	1119 Broadway.
Kelley, Forrest Lindville. Independence, Missouri.	1005 12th St.
Klepser, Fred. Weeping Water, Nebraska.	1045 Pennsylvania Ave.
Olson, Arthur Leonard. Rye.	1052 12th St.
Vidler, Robert Sandeman. Golden.	1121 Pennsylvania Ave.
Weld, Lyman Powell. Boulder.	520 Maxwell Ave.

—9.

SUMMER SESSION STUDENTS, 1911

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Allen, May Pueblo.	1038 University St.
Alter, Carrie Evalyn Wayne, Nebraska.	1090 13th St.
Ames, Fannie O Utica, New York.	1044 University St.
Anderson, Margaret Boulder.	1133 Pleasant St.
Anderson, Winifred Boulder.	1133 Pleasant St.
Arnett, Mabel Clarence, Missouri.	1033 14th St.
Ash, Adele May East St. Louis, Illinois.	1129 University St.
Ashbaugh, Roy Asquith Denver.	1080 10th St.
Ashley, Glaister Herod Boulder.	1004 Pleasant St.
Ashley, June Maude Boulder.	1004 Pleasant St.
Atkinson, Ernest Thomas Greeley.	1105 11th St.
Aughinbaugh, Ruth Boulder.	2336 13th St.
Ayres, Margaret Elise Sterling.	1133 Pleasant St.
Ball, M. Ethel Louisville.	University Place.
Banks, Lee Frazer Denver.	908 10th St.
Bennett, Clifford H Lenora, Kansas.	University Place.
Bennett, Rexie Ellen Boulder.	1145 10th St.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Bentley, Jean Eliza Cripple Creek.	University Place.
Beresford, Elizabeth Frances Boulder.	1064 13th St.
Bergheim, Milton N Boulder.	1313 Pine St.
Birdick, Arthur Alwin Boulder.	1024 Portland Ave.
Blair, Mary Justin, Texas.	969 10th St.
Boehm, Minnie Caroline Chicago, Illinois.	1089 13th St.
Boeke, W. Elizabeth Pavillion, Wyoming.	1146 Pleasant St.
Bouslog, John Samuel Boulder.	1537 9th St.
Boyd, Louie Croft Denver.	2924 11th St.
Branaman, Frances Seymour, Indiana.	Tolland.
Branson, Ernest Patton Rocky Ford.	1125 Pleasant St.
Brewster, Chauncey B Boulder.	1601 Hillside Road.
Brigham, Leslie E Trinidad.	1089 13th St.
Brown, Lutie Irene Emporia, Kansas.	1127 Broadway.
Bruner, Richard James, Jr Pueblo.	1441 12th St.
Buckingham, Nell New York, New York.	1645 Pine St.
Burket, Robert Smith Denver.	1205 13th St.
Burnett, Joseph P Neponset, Illinois.	835 Maxwell Ave.
Caldwell, Hattie Danville, Kentucky.	1229 13th St.
Calvird, Enid Clinton, Missouri.	1149 12th St.
Campbell, Cora Junction City, Kansas.	807 Spruce St.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Campbell, Durham	1354 Arapahoe Ave. Denver.
Cannell, Lillian Ethel	1129 13th St. Boulder.
Carman, Orval E	1005 14th St. Las Animas.
Carpenter, Blanche	1044 University St. Columbus Junction, Iowa.
Carr, Olive Virginia	1075 14th St. Meeker.
Carter, Carroll Scott	1012 14th St. Estelline, Texas.
Casady, Ida M	1083 14th St. Flagler.
Cassell, Mabel	969 10th St. Houston, Texas.
Chincholle, Jeanne	1135 Pennsylvania Ave. Denver.
Chrane, Curtis Earl	1305 17th St. Windsor, Missouri.
Clark, Maurice Arthur	1001 Spruce St. Boulder.
Chase, John Samson	2144 Walnut St. Denver.
Coffman, Myrle W	1180 10th St. Malvern, Iowa.
Coon, Inis Ella	1127 Broadway Upper Sandusky, Ohio.
Cornell, Benjamin D	University Place Louisville.
Corr, Alys May	1229 13th St. Dade City, Florida.
Crary, Ruth Naomi	966 10th St. Boulder.
Davis, Elizabeth Mary	1833 Arapahoe Ave. Boulder.
Davis, Luther	Y. M. C. A. Deeson, Mississippi.
Davis, Minnie	1165 12th St. Kingman, Kansas.
Davis, William Walter	1441 12th St. Muskegon, Michigan.

NAME AND HOME RESIDENCE. UNIVERSITY RESIDENCE.

Decker, Carl Marcellus.....1511 12th St.
Mancos.

Denton, Ina E.....1033 14th St.
Benton, Missouri.

DeVoss, J. Clarence..... 1327 6th St.
Boulder.

DeWeese, Cama E.....1041 Grand View Ave.
Boulder.

Donnelly, Theresa J.....1100 10th St.
Chicago, Illinois.

Downing, Robert Everard .....1155 13th St.
Claremore, Oklahoma.

Drake, Helen Frances.....12th and Pleasant Sts.
Pueblo.

Driftmier, Alma Louise.....1229 13th St.
Clarinda, Iowa.

Driftmier, Amelia Maria.....1229 13th St.
Clarinda, Iowa.

Driftmier, Rosa Margaret.....1229 13th St.
Clarinda, Iowa.

Eaton, Albert Budd.....1155 13th St.
Clay Center, Kansas.

Edy, Adrienne Margaret.....University Place
St. Louis, Missouri.

Elder, Mary Esther.....1075 12th St.
Boulder.

Engle, Kenyon L.....1155 13th St.
State Centre, Iowa.

Ferrier, Wallace T.....1229 University St.
Loveland.

Fiske, Eugene W.....1131 University St.
Santa Fe, New Mexico.

Forsyth, Orrin M.....1441 12th St.
Leadville.

Fowler, Nannie.....1165 12th St.
Kingman, Kansas.

Fox, Marguerite.....807 Spruce St.
Junction City, Kansas.

Frazier, Josie Florence.....1135 Broadway.
Burlington, Kansas.

Gehrung, Estella Helen.....411 Spruce St.
Boulder.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Glase, Medora V. Nashville, Tennessee.	Boulderado Hotel
Goddard, Eleanor. Carterville, Missouri.	1135 Broadway.
Goodykoontz, Colin Brummitt. Boulder.	1027 10th St.
Gordon, George Morris. Superior, Wisconsin.	828 University St.
Graham, John J. G. Hastings, Nebraska.	Y. M. C. A.
Grant, Anna May. Boulder.	1818 16th St.
Greenen, Lena Weber. Lemars, Iowa.	1515 Hill St.
Greenen, Rose Carmin. Lemars, Iowa.	1515 Hill St.
Guthrie, Paul Roy. Boulder.	1053 12th St.
Haaf, Edmonds William. Brooklyn, New York.	1902 Athens St.
Hale, Ernest Thomas. Denver.	University Place
Hall, Earl Fenton. Fowler.	1453 12th St.
Hallock, C. Wiles. Buena Vista.	Y. M. C. A.
Hammond, Mary Belle. Pittsburg, Pennsylvania.	University Place
Hampton, Alfred Lee. Fruita.	823 Maxwell Ave.
Hankins, Margaret M. Boulder.	1606 Pine St.
Hansen, Juliane Grace. Boulder.	576 Marine St.
Hansen, Grace M. Canton, Missouri.	1229 University St.
Harley, George Townsend. Boulder.	1441 12th St.
Harlow, Gertrude B. Cordell, Oklahoma.	1229 University St.
Harris, Robert Fitton. Boulder.	1143 Broadway.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Hart, James Lester Lufkin, Texas.	Chautauqua Grounds
Heaton, Archibald Burdette Boulder.	1305 17th St.
Hellems, Hortense Whiteley Boulder.	1162 12th St.
Hills, Roy O Boulder.	956 University St.
Hillyard, Grace Tanquary Halcyon, California.	Tolland
Hillyard, Sydney N Halcyon, California.	Tolland
Hinder, Kate San Angelo, Texas.	Chautauqua Grounds
Hoffmaster, Helen Creichton Boulder.	2029 Hill St.
Hollingsworth, Josephine Bacon New Orleans, Louisiana.	930 Lincoln Place.
Hoogendijk, Gerald L. C. M. van Rossen Boulder.	Men's Dormitory
Hotchkiss, Walter Kendrick Denver.	1129 13th St.
House. Lewis Clinton Bicknell, Indiana.	University Hospital
Hughes, Violet Ann Henryetta, Oklahoma.	University Place
Hunt, Nell Boulder.	1061 12th St.
Hurst, Eva Longmont.	1703 15th St.
Jackson, Floyd De Hopkins, Missouri.	1139 12th St.
Johnson, Lillian Elvera Weatherford, Texas.	1165 12th St.
Johnston, Edith Alice Alma, Nebraska.	1625 Pine St.
Kao, Tsung Te Chefoo, China.	1834 22nd St.
Kemble, Earl Wallace Golden.	1121 University St.
Kemp, Donald C Boulder.	1655 9th St

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Kennicott, Lillian May	R. F. D. No. 3, Box 85.
Boulder.	
Kent, Frederick C	1083 14th St.
Guthrie, Oklahoma.	
Ketchum, Mrs. Milo S	1146 12th St.
Boulder.	
Knuckey, Clyde T	1820 Grove St.
Boulder.	
Kramer, Helena	807 Spruce St.
Junction City, Kansas.	
La Croix, Ray R	University Place
Denver.	
Lacy, Louise	Tolland
Rifle.	
Lady, William Franklin	1040 11th St.
Victor.	
Lavan, Harry Mike	University Place
Cleveland, Ohio.	
Larson, Ruth Olie	623 Concord St.
Boulder.	
Lawrence, Abe Max	1135 Broadway
Trinidad.	
Layton, Maud	University Place.
Paonia.	
Leavenworth, Norma Edith	1221 University St.
Lilbourn, Missouri.	
Lehrritter, Louisa H	2116 Walnut St.
Denver.	
Lewis, Glenn Francis	1441 12th St
Denver.	
Lowe, Helen	1165 12th St.
Kingman, Kansas.	
Lummis, Herbert Clare	1155 13th St.
Montclair, New Jersey.	
Lynch, Alice Marie	1243 Grand View Ave.
Sioux City, Iowa.	
MacArthur, Eunice Scratch	1083 14th St.
Atoka, Oklahoma.	
Mannering, Lou	University Place.
Cripple Creek.	
Manning, Clarence Gilbert	1049 Pennsylvania Ave.
Lafayette.	

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
March, Marianna Jackson, Tennessee.	Chautauqua Grounds
Marshall, J. A. Victor.	955 University St.
Martin, Helen Gertrude Leadville.	1036 Grand View Ave.
McCarthy, Daniel Thaddeus Boulder.	1073 Lincoln Place
McCausland, Calla Amelia Denver.	1057 13th St.
McCrery, Irene Corsicana, Texas.	Chautauqua Grounds
McGilvry, Eleanor Boulder.	1133 Pleasant St.
McKown, Maud Mildred Julesburg.	University Place
McNeil, Gracie May Boulder.	1844 Hill St.
McRae, Roy G Trenton, Missouri.	University Place
Miller, Earle Brenneman Boulder.	921 Regent St.
Miller, Eva Grace Boulder.	Tolland
Mints, Elsie Boulder.	607 Maxwell Ave.
Misener, Victor E Malta, Montana.	University Place
Missimore, Alma May Comanche, Oklahoma.	University Place
Mitchell, Claire W Genda Springs, Kansas.	University Place
Mitchell, Harry Thomas Sugar City.	1093 10th St.
Moore, Evelyn Viola Longmont.	Tolland
Moore, Margaret Isabel Taos, New Mexico.	1121 University St.
Moore, Wilma V Italy, Texas.	Chautauqua Grounds
Morgan, Harriett Maude Boulder.	1041 13th St.

NAME AND HOME RESIDENCE. UNIVERSITY RESIDENCE.

Morgan, Leo Josephine.....1816 Grove St.
Boulder.

Morris, Anna Belle.....960 Regent St.
Boulder.

Morrison, Margaret.....1091 14th St.
Albia, Iowa.

Nance, Jessie Wood.....1044 Pleasant St.
Palestine, Texas.

Neudecker, Ella.....1229 13th St.
De Beque.

O'Connell, William Ward.....1130 10th St.
Georgetown.

Oesterhaus, Verne.....807 Spruce St.
Junction City, Kansas.

Ostenberg, Minnie M.....1165 Broadway
Claremore, Oklahoma.

Ostrander, Harry Womersley.....Men's Dormitory
Golden.

Painter, Kate.....1155 13th St.
Afton, Oklahoma.

Paull, Mabel A.....972 14th St.
Sigourney, Iowa.

Peirano, Ruth R.....University Place
Wilson, Kansas.

Penn, Kate Maria.....1067 13th St.
Norman, Oklahoma.

Perkins, Eva M.....1243 Grand View Ave.
Merkel, Texas.

Petersen, Dorothy Anne.....1221 University St.
Colorado Springs.

Petit, LeRoy H.....1044 University St.
Holton, Kansas.

Peyton, Mary Lou.....1121 University St.
Columbus, Mississippi.

Phillips, George Burton.....1027 Pennsylvania Ave.
Fruita.

Presson, James A.....University Place
Warren, Arkansas.

Pryor, Hugh Clark.....1119 Broadway
Boulder.

Ragland, Ella Barrett.....921 9th St.
Paris, Texas.

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Read, Hazel	1221 University St.
Kinsley, Kansas.	
Remington, Oliver Samuel	421 Concord St.
Boulder.	
Richardson, Dio	940 14th St.
Boulder.	
Riedesel, Nellie	1209 Pennsylvania Ave.
Boulder.	
Risser, Ada B	1146 Pleasant St.
Colorado Springs.	
Ritchie, Terry Vattier	1210 Pleasant St.
Los Angeles, California.	
Roberts, Abygail Esther	930 14th St.
Boulder.	
Roberts, Lewis Dillon	1045 14th St.
Boulder.	
Robins, Loretta	1300 Pennsylvania Ave.
Muskogee, Oklahoma.	
Rodgers, Gertrude	807 Spruce St.
Junction City, Kansas.	
Rohde, Earnest Conrad, Jr.	1155 13th St.
State Center, Iowa.	
Rohwer, George H.	624 Pine St.
Boulder.	
Ross, Edith K.	1706 Athens St.
Boulder.	
Rowland, Mrs. C. W.	819 Spruce St.
Boulder.	
Rymer, Dana Clyde	Y. M. C. A.
Boulder.	
Sanford, Martha Lillian	1133 Pleasant St.
Washington, Pennsylvania.	
Sawyer, Bessie J. E.	1129 University St.
East St. Louis, Illinois.	
Selfridge, Helen D.	1148 11th St.
Boulder.	
Selfridge, Lucille G.	1148 11th St.
Boulder.	
Shackelford, Goddard	1210 Pleasant St.
Denver.	
Shelledy, Ruth M.	1075 14th St.
Boulder.	

NAME AND HOME RESIDENCE.	UNIVERSITY RESIDENCE.
Shulters, Maude Alice Boulder.	1040 11th St.
Simpson, Colin C Denver.	1229 University St.
Skerry, Arthur Wellesley Denver.	1105 11th St.
Slaughter, Verita A Colorado Springs.	1131 University St.
Smith, George Albert Fowler.	Y. M. C. A.
Smith, Guy Watson Castle Rock.	1045 Pennsylvania Ave.
Smith, May Louise Denver.	1121 13th St.
Smith, Mildred Chapman, Nebraska.	1090 13th St.
Smith, Rachel Brown Obion, Tennessee.	1135 Pennsylvania Ave.
Smith, Robert Greeley.	1129 13th St.
Spangler, Ella B La Rose, Illinois.	University Place
Spaulding, Iva Maude Boulder.	1146 Pleasant St.
Sperry, Charles Stillman, Jr Boulder.	1305 University St.
Staub, Walter J Boulder.	1021 10th St.
Stevenson, Ethel M Notasulga, Alabama.	1229 University St.
Stoddard, William Smith Boulder.	1127 12th St.
Strong, Emma Vera Sterling, Kansas.	1057 13th St.
Stryker, Mary Boulder.	1622 18th St.
Swift, Perry Clayton Kensington, Kansas.	University Place
Tanquary, Lillian Clemens Denver.	Tolland
Taylor, Archibald Somerville, New Jersey.	University Place

NAME AND HOME RESIDENCE. UNIVERSITY RESIDENCE.

Templeton, Hassell.....1012 University St.
Boulder.

Templeton, Nelle.....1012 University St.
Boulder.

Thomason, Mrs. Robert Ewing.....1067 13th St.
Gainesville, Texas.

Torrence, Onah M.....820 Concord St.
Baileyville, Kansas.

Tourtelotte, Louise Lucretia.....Tolland
Denver.

Tourtelotte, Margaret.....Tolland
Denver.

Tucker, James B..... 1834 22nd St.
Chase, Kansas.

Turner, James H.....1033 14th St.
Colorado Springs.

Turney, Vera Faye.....940 14th St.
Loveland.

Unseld, George Peterkin.....973 14th St.
Shepherdstown, West Virginia.

Van Idour, Twyla.....1135 Broadway
Carterville, Missouri.

Venables, Raymond J.....1037 12th St.
Boulder.

Ward, Herbert Cooper.....University Place
Boulder.

Waterman, Ralph Douglas.....1205 13th St.
Denver.

Webb, May Madeline.....1155 13th St.
Claremore, Oklahoma.

Weeks, Winifred M.....1827 Walnut St.
Hot Springs, Arkansas.

Weisgerber, Lillian.....1603 Arapahoe Ave.
Boulder.

Wheaton, Libbie.....1942 Pennsylvania Ave.
Denver.

Whitmore, David Paul.....University Place
Denver.

Wolfersberger, Eda Elizabeth.....1085 14th St.
Denver.

Wyland, Mary Jane.....1025 Maxwell Ave.
Harlan, Iowa. —248.

SUMMARY OF ATTENDANCE

Graduate Students		84
College of Liberal Arts—		
Seniors	111	
Juniors	110	
Sophomores	196	
Freshmen	270	
Special Students	38	725
College of Engineering—		
Seniors	43	
Juniors	60	
Sophomores	79	
Freshmen	104	
Special Students	2	288
School of Medicine—		
Fourth Year	40	
Third Year	51	
Second Year	14	
First Year	11	
Pharmacy Students	2	118
School of Law—		
Third Year	23	
Second Year	35	
First Year	59	
Special Students	9	126
		1,341
Deduct for names counted twice		35
Summary		1,306

(80 duplicated, 168 registered only in summer.)

Summer Session	248

INDEX

PAGE

ANNOUNCEMENTS 9
BOARD OF REGENTS 12
Advisory Board 13
Committees of the Board 12
Officers of the Board 12
CALENDAR 8
CATALOGUE OF STUDENTS 257
COLLEGE OF COMMERCE 117
Admission 45, 119
Announcement 118
Faculty 117
Organization 119
Requirements for Graduation 119
Subjects 119
Tuition and Fees 55
COLLEGE OF EDUCATION 121
Admission 45, 124
Curriculum, Design of 123
Diploma in Education, Bachelor's 125
Diploma in Education, Master's 129
Diplomas, State 130
Faculty 121
Function 122
General Statement 122
Graduate Work 129
Groups 127
Organization 122
Practice Teaching 128, 129
Recommendation of Teachers, Committee on 129
Requirements for Graduation 125
Schedule 126
State Diplomas 130

PAGE
Training of Teachers 123
Tuition and Fees 55
College of Engineering 157
Admission 46, 160
Advanced Standing 160
Buildings 161
Chemical Engineering 171, 178
Civil Engineering 169, 172, 180
Courses 169
Degrees 161
Description of Courses 180
Electrical Engineering 169, 174, 186
Engineering Mathematics 195
Equipment 161
Faculty 157
General Engineering Drawing 167, 194
General Statement 160
Laboratories 162
Applied Mechanics 163
Cement 163
Civil Engineering 162
Electrical Engineering 164
Hydraulic 163
Mechanical Engineering 166
Road Materials Testing 164
U. S. Timber Testing Station 164
Work Shop 167
Languages 196
Library 35
Mechanical Engineering 170, 176, 189
Purpose 160
Requirements for Degrees 172
Shop Work 193
Tuition and Fees 56
U. S. Timber Testing Station, Staff of 159
College of Liberal Arts 57
Admission 45, 70
Archæological Investigations 68
Art Collections 67

PAGE
Courses of Study 69
Description of Courses 75
Biology 95
Botany 96
Chemistry 91
Comparative Literature 82
Economics 111
Education 104
Electives in Professional Schools 115
English Language 84
English Literature 82
Ethics 102
French 80
Geology 98
German Language and Literature 79
Greek 75
Hebrew 78
History 108
Italian 82
Latin 76
Library Science and Practice 87
Logic 102
Mathematics 87
Mineralogy 98
Music 114
Oratory and Expressive Reading 86
Philosophy 102
Physics 88
Psychology 102
Rhetoric 84
Romance Languages 80
Sanitary Science 95
Sociology 111
Spanish 81
Zoology 97
Equipment 62
Faculty 57
Farnsworth Collection of Coins 68
Greek Photographs 68

PAGE
Groups 72
Laboratories 62
Biological 63
Chemical 62
Geological and Mineralogical 63
Physical 62
Psychological 64
Research 64
Museum and Cabinets 64
Botanical Collection 65
Ethnological Collections 65
Guggenheim Biological Collection 65
Guggenheim Mineral Collection 65
Mineralogical and Geological Collection 65
Museum 66
Paleontological Collections 65
Photograph and Lantern Slide Cabinets 65
Zoological Collections 64
Order of Description of Courses 74
Phillips Art Collection 67
Requirements for Graduation 70
Schedule 71
Tuition and Fees 55
COLLEGES AND SCHOOLS OF THE UNIVERSITY 16
EXPENSES 54
FACULTY OF THE UNIVERSITY 17
GENERAL STATEMENT 29
Accredited Schools 50, 52
Admission 44
Alumni Association 40
Associated Students 41
Athletics, Supervision of 42
Bennett Prize 42
Buildings 31
Chapel Exercises 40
Chautauqua 30
Christian Associations, Church Attendance 39
Dean of Women 43
Dormitories 53

PAGE
Entrance 44
Establishment 29
Expenses 54
Fees and Tuition 55
High-School Day 40
History 29
Honor Societies 37
Library 34
Location 30
Matriculation Scholarships 50
Musical Organizations 39
Oratorical and Debating Interests 42
Physical Training 42
Publications 36
Railroad Rates 54
Requirements for Admission 44
English, Description of Units in 47
Scientific Society 37
Schools Seeking to be Accredited 50
Special Students and Advanced Standing 50
Student Literary Societies and Clubs 38
Student Pastor 40
Student Publications 37
Tuition and Fees 55
Woman's League 44
GRADUATE SCHOOL 135
Admission 138
Advanced Standing 139
Announcement 138
Candidates for a Degree 139
Description of Courses 143
Biology (Botany, Zoology) 151
Chemistry 150
Civil Engineering 148
Comparative Literature 146
Education 154
Electrical Engineering 148
English Language 147
English Literature 146

PAGE
Geology 152
Germanic Languages and Literatures (German, Gothic, Scandinavian) 144
Greek Language and Literature 143
History 154
Latin Language and Literature 143
Law 155
Literature (in English) 146
Mathematics 147
Mechanical Engineering 149
Mineralogy 152
Music 156
Philosophy 153
Physics 149
Psychology 153
Romance Languages and Literatures (French, Spanish, Italian) 145
Social Science 155
Doctor's Degree 140
Engineering Degrees 141
Faculty 135
Fees and Expenses 56, 139
General Statement 138
Graduate Committee 137, 139
Instruction 141
Instructorships 139
Master's Degree 140
Record of Scholarship 139
Requirements for Degrees 140
Residence 139
Tuition and Fees 56
LIBRARY 34
SCHOOL OF LAW 241
Academic Year 245
Admission 245
Advanced Standing 245
American Law School, Development of 246
Building 245
Course of Study 248

PAGE

Degree 246
Faculty 243
Instruction in Other Departments 253
Lecturers 244
Library 35, 254
The C. I. Thomson Collection 254
Method of Instruction 246
Practice 252
Special Students 245
Statement 245
Tuition and Fees 56, 254
SCHOOL OF MEDICINE 199
Admission 213
Advanced Standing 213
Buildings 208, 211
Clinics 211
Courses Leading to Two Degrees 213
Denver and Gross College, Union with 208
Description of Courses 215
Director of Clinics and Clinical Laboratories 204
Dispensary Staff 204
Equipment in Boulder 208
Equipment in Denver 211
Faculty 199
Fees 56, 214
General Statement 208
Historical Note 208
Hospital (Boulder) 233
Committee 235
Fees 233
Superintendent 235
Training School for Nurses 234
Hospital and Dispensary Staff (Denver) 204
Laboratories 210, 211
Library 36, 212
Requirements for a Degree 214
Scholarship, The E. G. Stoiber 212
Senate 203
Session of 1912-1913 212

PAGE
Summary of Hours for 1912-1913 231
Tuition and Fees 56, 214
SCHOOL OF PHARMACY 237
Admission 238
Building 238
Courses 239
Degrees 239
Description of Courses 240
Equipment 238
Faculty 237
Fees 56, 238
Function 238
General Statement 238
Organization 238
Requirements for Graduation 239
Ph.C. Course 239
B.Phar. Course 240
B.S. in Phar. Course 240
Schedule 239
SCHOOL OF SOCIAL AND HOME SERVICE 131
Admission 45, 132
Certificate 133
Course of Study 133
Curriculum, Design of 132
Degree 132
Faculty 131
Fees 55, 132
Function 132
General Statement 132
Relation to Regular B.A. Course 132
SUMMARY OF ATTENDANCE 341
SUMMER SESSION 255
SUMMER SESSION STUDENTS, 1911 329

W. F. ROBINSON PTG. CO., DEN

UNIVERSITY OF COLORADO BULLETIN

Vol. XIII, No. 3.

Published Monthly by the Regents of the University of Colorado.
Entered at the Post Office, Boulder, Colorado, as second-class mail matter.

CATALOGUE, 1912–1913

BOULDER, COLORADO, MARCH, 1913

UNIVERSITY OF COLORADO BULLETIN

Vol. XIII, No. 3.

Published Monthly by the Regents of the University of Colorado.
Entered at the Post Office, Boulder, Colorado, as second-class mail matter.

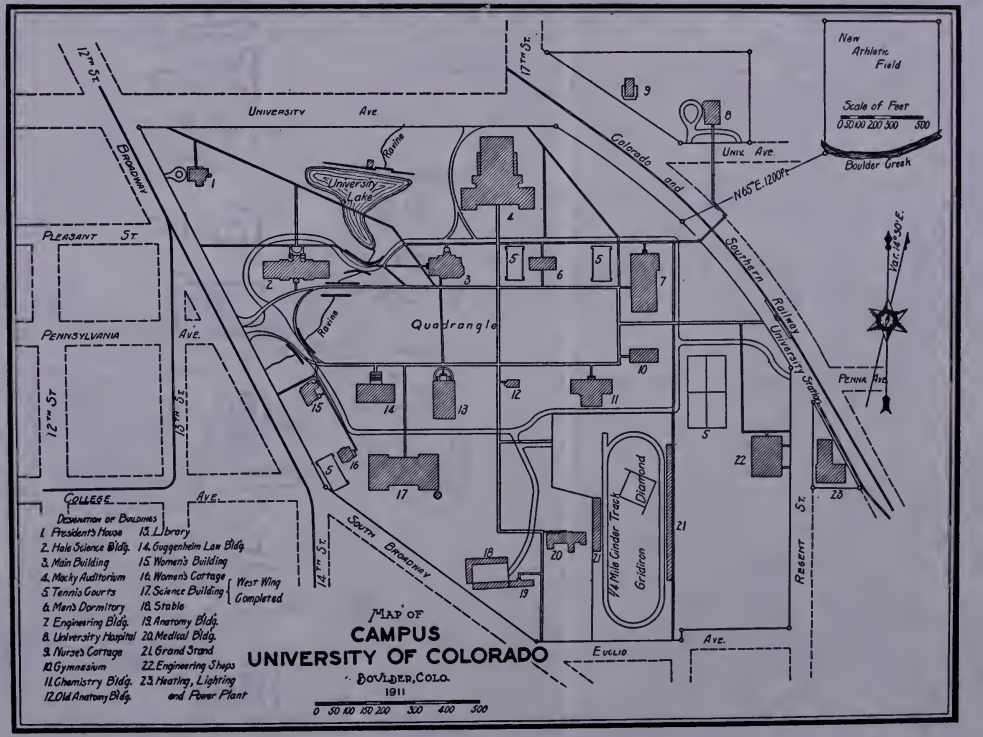
CATALOGUE, 1912–1913

BOULDER, COLORADO, MARCH, 1913

The
University of Colorado
Catalogue, 1912-1913

With
Announcements for
1913-1914

Boulder, Colorado, March, 1913


New Athletic Field
Scale of Feet
0 50 100 200 300 500
Boulder Creek
University Ave.
Univ. Ave.
12th St.
Broadway
13th St.
14th St.
Pleasant St.
Pennsylvania Ave.
University Lake
Ravine
Quadrangle
Colorado and Southern Railway
N 65° E. 1200 Ft.
Penna. Ave.
South Broadway
Resent St.
Evelio Ave.
Diamond
Gridiron
¼ Mile Cinder Track
College Ave.
Donation of Buildings
1. President's House
2. Hale Science Bldg.
3. Main Building
4. Macky Auditorium
5. Tennis Courts
6. Men's Dormitory
7. Engineering Bldg.
8. University Hospital
9. Nurse's Cottage
10. Gymnasium
11. Chemistry Bldg.
12. Old Anatomy Bldg.
13. Library
14. Guggenheim Law Bldg.
15. Women's Building
16. Women's Cottage
17. Science Building
West Wing Completed
18. Stable
19. Anatomy Bldg.
20. Medical Bldg.
21. Grand Stand
22. Engineering Shops
23. Heating, Lighting and Power Plant
Map of
CAMPUS
UNIVERSITY OF COLORADO
Boulder, Colo.
1911
0 50 100 150 200 300 400 500

1913 CALENDAR 1913

	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
Jan.	--	--	--	1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	--
Feb.	--	--	--	--	--	--	1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	--
Mar.	--	--	--	--	--	--	1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31	--	--	--	--	--
Apr.	--	--	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	--	--	--
May	--	--	--	--	1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31
June	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	--	--	--	--	--
July	--	--	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	31	--	--
Aug.	--	--	--	--	--	1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31	--	--	--	--	--	--
Sept.	--	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	--	--	--	--
Oct.	--	--	--	--	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	--
Nov.	--	--	--	--	--	--	1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	--	--	--	--	--	--
Dec.	--	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31	--	--	--

1914 CALENDAR 1914

	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
Jan.	--	--	--	--	1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31
Feb.	--	--	--	--	--	--	--
	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	--	--	--	--	--	--	--
Mar.	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31	--	--	--	--
Apr.	--	--	--	--	--	--	--
	--	--	--	1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	--	--
May	--	--	--	--	--	1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31	--	--	--	--	--	--
June	--	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	--	--	--	--
July	--	--	--	1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	--
Aug.	--	--	--	--	--	--	1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31	--	--	--	--	--
Sept.	--	--	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	--	--	--
Oct.	--	--	--	--	1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31
Nov.	--	--	--	--	--	--	--
	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	--	--	--	--	--
Dec.	--	--	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	31	--	--

ANNOUNCEMENTS

1913.

Jan. 15, Wednesday ..Meeting of Board of Regents.
Jan. 27, Monday..... Second Semester begins.
Feb. 12, Wednesday ..Lincoln's Birthday (Holiday).
Feb. 22, Saturday ....Washington's Birthday.
March 22, Saturday to
March 30, Sunday ....Spring Recess.
April 18, Friday .....Arbor Day (Holiday).
April 23, Wednesday ..Meeting of Board of Regents.
May 17, Saturday ....High-School Day.
May 30, Friday .....Decoration Day (Holiday).
All examinations completed.
May 31, Saturday ....Phi Beta Kappa Exercises.
Sigma Xi Exercises.
June 1, Sunday .....Baccalaureate Address.
Annual Address before the Christian Associations.
June 2, Monday .....Senior Class Play.
Meeting of Board of Regents.
June 3, Tuesday .....Class Day Exercises and Parade.
President's Reception.
Alumni Exercises and Reception.
Senior Promenade.
June 4, Wednesday ...Commencement.
Alumni Banquet.
June 5, Thursday ....Summer Vacation begins.
June 23 to August 2..Summer Session.
Sept. 1, Monday .....Meeting of Board of Regents.

ACADEMIC YEAR, 1913--1914

Sept. 8, Monday .....First Semester begins; Assembly of Students at 11:00; Examinations and Presentation of Certificates; Registration (Registration begins Friday, Sept. 5).

Oct. 12, Sunday .....Columbus Day.

Nov. 12, Wednesday ..Meeting of Board of Regents.

Nov. 27, Thursday ...Thanksgiving Day (Holiday).

Nov. 28, Friday .....Holiday.

Dec. 20, Saturday to

Jan. 4, Sunday .....Winter Recess.

1914.

Jan. 21, Wednesday ..Meeting of Board of Regents.

Jan. 26, Monday .....Second Semester begins.

Feb. 12, Thursday ....Lincoln's Birthday (Holiday).

Feb. 22, Sunday .....Washington's Birthday.

March 21, Saturday to

March 29, Sunday ... Spring Recess.

April 17, Friday .....Arbor Day (Holiday).

April 22, Wednesday.. Meeting of Board of Regents.

May 16, Saturday ....High-School Day.

May 29, Friday .....All examinations completed.

May 30, Saturday ....Decoration Day.
Phi Beta Kappa Exercises.
Sigma Xi Exercises.

May 31, Sunday .....Baccalaureate Address.
Annual Address before the Christian Associations.

June 1, Monday .....Senior Class Play.
Meeting of Board of Regents.

June 2, Tuesday .....Class Day Exercises and Parade.
President's Reception.

June 2, Tuesday.....Alumni Exercises and Reception.
Senior Promenade.
June 3, Wednesday ..Commencement.
Alumni Banquet.
June 4, Thursday ....Summer Vacation begins.
June 22 to August 1..Summer Session.
Sept. 7, Monday .....Meeting of Board of Regents

BOARD OF REGENTS

ETHELBERT B. ADAMS.....Telluride
Term expires, 1914.

SAMUEL I. HALLETT.....Aspen
Term expires, 1914.

WILLIAM J. KING.....Villa Grove
Term expires, 1916.

ANNA L. WOLCOTT VAILE.....Denver
Term expires, 1916.

WILLIAM H. BRYANT.....Denver
Term expires, 1918.

JAMES B. RAGAN.....Sterling
Term expires, 1918.

OFFICERS OF THE BOARD

JAMES H. BAKER..... Boulder .....President
FRANK H. WOLCOTT..... Boulder .....Secretary
CHARLES H. CHENEY..... Boulder .....Treasurer

COMMITTEES OF THE BOARD

EXECUTIVE—Messrs. Adams, Hallett, Baker.
AUDITING—Messrs. Bryant, King, Baker.
BUILDINGS AND GROUNDS—Messrs. Hallett, Adams, Baker.
FINANCE—Mr. King, Mrs. Vaile.
LIBRARY—Mrs. Vaile, Messrs. Ragan, Smith.
INSTRUCTORS—Messrs. Baker, Ragan, Bryant.

*ADVISORY BOARD

	Town.	County.
George A. Garard	*Brighton*	*Adams*
		Arapahoe
Allen J. Nossaman, M.D	*Pagosa Springs*	*Archuleta*
William Hooker	*Springfield*	*Baca*
P. G. Scott	*Las Animas*	*Bent*
Thomas Butler	*Longmont*	*Boulder*
George H. Curfman, M.D	*Salida*	*Chaffee*
E. P. Hickman	*Cheyenne Wells*	*Cheyenne*
Bernard J. O'Connell	*Georgetown*	*Clear Creek*
Albert A. Stover	*Idaho Springs*	*Clear Creek*
Frederick W. Swanson	*Alamosa*	*Conejos*
Charles Groenendyke	*San Luis*	*Costilla*
		Crowley
John H. Leary	*Westcliffe*	*Custer*
Burton P. Smith	*Delta*	*Delta*
Gustave C. Bartels	*Denver*	*Denver*
Clayton C. Dorsey	*Denver*	*Denver*
Charles R. Dudley	*Denver*	*Denver*
Irving Hale	*Denver*	*Denver*
Horace N. Hawkins	*Denver*	*Denver*
Edwin H. Park	*Denver*	*Denver*
A. Dupont Parker	*Denver*	*Denver*
Frank E. Shepard	*Denver*	*Denver*
John W. Springer	*Denver*	*Denver*
Thomas B. Stearns	*Denver*	*Denver*
Thomas L. Wilkinson	*Denver*	*Denver*
Charles MacAllister Willcox	*Denver*	*Denver*
		Dolores
John Anderson	*Castle Rock*	*Douglas*
James Dilts	*Eagle*	*Eagle*
William D. Reilly	*Kiowa*	*Elbert*
Joseph F. Humphrey	*Colorado Springs*	*El Paso*
Robert Kerr	*Colorado Springs*	*El Paso*
Matt N. Lines	*Canon City*	*Fremont*
James G. Johnston	*Florence*	*Fremont*

*The members of the Advisory Board are appointed by the Regents for a term of one year. The service is without compensation. Annual meeting of the Advisory Board, at the University, Tuesday and Wednesday of Commencement Week.

	Town.	County.
Barnette T. Napier	*Glenwood Springs*	*Garfield*
Chase Withrow	*Central City*	*Gilpin*
David P. Howard	*Sulphur Springs*	*Grand*
John A. Lehrritter	*Gunnison*	*Gunnison*
Benjamin F. Cummings, M.D.	*Lake City*	*Hinsdale*
Charles Hayden	*Walsenburg*	*Huerfano*
Thomas D. Baird, M.D.	*Walsenburg*	*Huerfano*
Owen S. Case	*Walden*	*Jackson*
William G. Smith	*Golden*	*Jefferson*
Raymond Miller	*Galatea*	*Kiowa*
William D. Selder	*Burlington*	*Kit Carson*
Charles Cavender	*Leadville*	*Lake*
Charles A. Pike	*Durango*	*La Plata*
Frank J. Annis	*Fort Collins*	*Larimer*
Joseph C. Bell	*Trinidad*	*Las Animas*
Edward H. Day	*Trinidad*	*Las Animas*
		Lincoln
William L. Hays	*Sterling*	*Logan*
Horace T. DeLong	*Grand Junction*	*Mesa*
John A. Biles	*Creede*	*Mineral*
Robert M. Richardson	*Craig*	*Moffat*
Leonard H. Clark, M.D.	*Mancos*	*Montezuma*
J. F. Coleman, M.D.	*Montrose*	*Montrose*
*Moncellus L. More	*Fort Morgan*	*Morgan*
Frederick W. Lockwood, M.D.	*Fort Morgan*	*Morgan*
Robert W. Patterson	*La Junta*	*Otero*
William W. Rowan, M.D.	*Ouray*	*Ouray*
Charles A. Wilkin	*Fairplay*	*Park*
R. G. McKibben	*Holyoke*	*Phillips*
		Pitkin
John C. Horn	*Lamar*	*Prowers*

*Deceased.

	Town.	County.
Alva Adams	*Pueblo*	*Pueblo*
P. J. Dugan	*Pueblo*	*Pueblo*
James Lyttle	*Meeker*	*Rio Blanco*
Robert G. Breckenridge	*Monte Vista*	*Rio Grande*
Benjamin F. Niesz	*Steamboat Springs*	*Routt*
Charles Tarbell	*Saguache*	*Saguache*
John T. Joyce	*Silverton*	*San Juan*
Stephen A. Bailey	*Telluride*	*San Miguel*
Bertrand D. Parker, Jr.	*Julesburg*	*Sedgwick*
Clarence O. Finch	*Julesburg*	*Sedgwick*
William F. Forman	*Breckenridge*	*Summit*
Griffith R. Lewis	*Cripple Creek*	*Teller*
Nelson Franklin	*Victor*	*Teller*
Harold D. Thompson	*Cripple Creek*	*Teller*
Egbert More	*Akron*	*Washington*
George D. Statler	*Greeley*	*Weld*
Thomas B. Groves	*Wray*	*Yuma*

COLLEGES AND SCHOOLS OF THE UNIVERSITY

The Colleges and Schools of the University of Colorado are the following:

I. College of Liberal Arts:
Courses leading to the degree B.A.

II. College of Commerce:
Courses leading to the degree B.A. and special certificate.

III. College of Education:
Courses leading to the degree B.A. and special certificate.

IV. School of Social and Home Service:
Courses leading to certificate of work done.

V. Graduate School, leading to the degrees M.A. and Ph.D.; also M.S., C.E., E.E., M.E.

VI. College of Engineering:
Civil Engineering, leading to the degree B.S. (C.E.).
Electrical Engineering, leading to the degree B.S. (E.E.).
Mechanical Engineering, leading to the degree B.S. (M.E.).
Chemical Engineering, leading to the degree B.S. (Ch.E.).

VII. School of Medicine, leading to the degree M.D.

VIII. School of Pharmacy, leading to the degrees Ph.C., B.Phar., and B.S. in Phar.

IX. School of Law, leading to the degree LL.B.

X. Summer Session.

XI. University Extension Division:
Correspondence-Study.
Study Centers.
Lectures and Addresses.
Social Welfare.
Information, and Library Extension.
Bulletins of Investigations.

*GENERAL FACULTY

James H. Baker, M.A., LL.D., President.

J. Raymond Brackett, Ph.D., Dean of the Graduate School; Professor of Comparative and English Literature.

Luman M. Giffin, M.D., Professor of Surgery.

Ira M. DeLong, M.A., Professor of Mathematics.

Moses Hallett, LL.D., Dean of the Law School and Professor of American Constitutional Law, *Emeritus.*

John Chase, B.A., M.D., Professor of Ophthalmology and Otology.

Thomas E. Taylor, B.A., M.D., Professor of Obstetrics.

Albert A. Reed, LL.B., Professor of Law.

William B. Craig, M.D., Professor of Surgery.

E. Barber Queal, M.D., Professor of Physiology.

Fred B. R. Hellems, Ph.D., Dean of the College of Liberal Arts; Professor of Latin.

George H. Cattermole, M.D., Professor of Medicine (Pediatrics).

Charles C. Ayer, Ph.D., Professor of Romance Languages.

William H. Bryant, B.S., LL.B., Professor of Law.

†George Norlin, Ph.D., Professor of Greek.

Francis Ramaley, Ph.D., Professor of Biology.

Charles S. Elder, M.D., Professor of Surgery (Gynecology).

Newton Wiest, M. D., Professor of Dermatology.

Edwin Van Cise, Professor of Law.

Melanchthon F. Libby, Ph.D., Professor of Philosophy.

William H. Pease, B.A., LL.B., Professor of Law.

John Bernard Ekeley, Ph.D., Sc.D., Professor of Chemistry.

John Campbell, M.A., LL.B., LL.D., Dean of the Law School, *Emeritus;* Professor of Law of Private and Municipal Corporations.

Russell D. George, M.A., Professor of Geology.

John D. Fleming, B.A., LL.B., LL.D., Dean of the Law School; Professor of Law; Associate Judge of Practice Court.

James R. Arneill, B.A., M.D., Professor of Medicine (Clinical Medicine).

---

*Professors, Assistant Professors, Lecturers and Instructors are arranged in the order of appointment. Assistants rank as their departments. Within the general faculty are organized the Advisory Council, Senate and faculties of the several colleges and schools.

†On leave of absence, 1912-1913.

Milo S. Ketchum, C.E., Dean of the College of Engineering; Professor of Civil Engineering.
Richard W. Corwin, M.D., LL.D., Professor of Surgery.
Charles B. Lyman, M.D., Professor of Surgery.
John M. Foster, Professor of Oto-laryngology.
Edward Jackson, M.A., M.D., Professor of Ophthalmology.
Herbert S. Evans, E.E., Professor of Electrical Engineering.
John A. Hunter, M.E., Professor of Mechanical Engineering.
Theodore D. A. Cockerell, Professor of Zoology.
William P. Harlow, B.A., M.D., Dean of the Medical School.
George M. Chadwick, Professor of Music.
*James F. Willard, Ph.D., Professor of History.
Carl C. Eckhardt, Ph.D., Acting Professor of History.
Oliver C. Lester, Ph.D., Professor of Physics.
Frank E. Thompson, B.A., Secretary of the College of Education; Professor of Education.
Ross C. Whitman, B.A., M.D., Secretary of the School of Medicine, Denver Division; Professor of Serology and Surgical Pathology.
Junius Henderson, B.A., Curator of Museum; Professor of Natural History.
John S. McLucas, M.A., Professor of English.
Grace Fleming van Sweringen, Ph.D., Professor of Germanic Languages.
Oscar M. Gilbert, M.D., Professor of Medicine (Clinical Medicine).
Alvin R. Peebles, M.D., Professor of Preventive and Experimental Medicine.
Clough T. Burnett, M.D., Professor of Bacteriology.
Milo G. Derham, Ph.D., Director of Summer Session; Professor of Latin.
Saul Epsteen, Ph.D., Secretary of the Graduate School; Professor of Engineering Mathematics.
Lawrence W. Cole, Ph.D., Secretary of the School of Social and Home Service; Professor of Psychology.
George E. Neuhaus, M.D., Professor of Neurology and Psychiatry.
Henry Sewall, Ph.D., M.D., Professor of Medicine.
Edmund J. A. Rogers, M.A., M.D., Professor of Surgery.
Robert Levy, M.D., Professor of Oto-laryngology.
William H. Davis, M.D., Professor of Dermatology and Genito-Urinary Diseases.

---

*On leave of absence, 1912-1913.

WILLIAM J. ROTHWELL, M.D., Professor of Medicine.
FRANCIS H. MCNAUGHT, M.D., Professor of Obstetrics.
LEONARD FREEMAN, B.S., M.A., M.D., Professor of Surgery.
JOSIAH N. HALL, B.S., M.D., Professor of Medicine.
CHARLES A. POWERS, M.A., M.D., Professor of Surgery (Clinical Surgery).
CHARLES F. SHOLLENBERGER, M.D., Professor of Medicine (Pediatrics).
HOWELL T. PERSHING, M.S., M.D., LL.D., Professor of Neurology and Psychiatry.
HERBERT B. WHITNEY, B.A., M.D., Professor of Medicine (Pediatrics).
HORACE G. HARVEY, B.A., M.D., Professor of Surgery.
SHERMAN G. BONNEY, M.A., M.D., Professor of Medicine.
MOSES KLEINER, M.D., Professor of Therapeutics.
GEORGE B. PACKARD, M.D., Professor of Surgery (Orthopedics).
T. MITCHELL BURNS, M.D., Professor of Obstetrics.
WALTER A. JAYNE, M.D., Professor of Surgery (Gynecology and Abdominal Surgery).
CHARLES B. VAN ZANT, M.D., Professor of Physiology.
MELVILLE BLACK, M.D., Professor of Ophthalmology.
WILLIAM C. MITCHELL, M.D., Professor of Bacteriology.
DAVID H. COOVER, M.D., Professor of Ophthalmology.
SAMUEL B. CHILDS, B.A., M. D., Professor of Roentgenology.
JAMES H. PERSHING, B.A., Professor of Medical Jurisprudence.
WILLIAM C. BANE, M.D., Professor of Oto-laryngology.
GEORGE H. STOVER, M.D., Professor of Roentgenology.
F. GILLETT BYLES, M.A., M.D., Professor of Hygiene.
JAMES C. TODD, B.Ph., M.D., Secretary of the School of Medicine, Boulder Division; Professor of Pathology.
*JOSEPH C. HUTCHISON, M.S., M.D., Professor of Obstetrics.
WILLIAM H. SHARPLEY, M.D., Professor of Medicine (Contagious Diseases).
CARBON GILLASPIE, M.D., Professor of Anatomy.
HOMER C. WASHBURN, B.S., Ph. C., Professor of Pharmacy.
ARTHUR J. MARKLEY, D.D.S., M.D., Professor of Dermatology.
LORAN D. OSBORN, Ph.D., Director of Extension; Professor of Sociology.

---

*Died, July 9, 1912.

Frederick A. Bushee, Ph.D., Secretary of the College of Commerce; Professor of Economics and Sociology.

Ralph D. Crawford, M.A., Assistant Professor of Geology.

David R. Jenkins, E.E., Assistant Professor of Electrical Engineering.

Clement C. Williams, C.E., Assistant Professor of Civil Engineering.

Walter W. Reed, M.D., Assistant Professor of Obstetrics.

S. Antoinette Bigelow, M.A., Dean of Women; Assistant Professor of Literature.

Frost C. Buchtel, M.D., Assistant Professor of Surgery.

Charles H. Williams, B.S. in Ed., B.A., Assistant Professor of Education.

Jacob Campbell, M.D., Assistant Professor of Surgery.

Edward F. Dean, M.D., Assistant Professor of Surgery (Clinical Surgery).

Aubrey H. Williams, M.D., Assistant Professor of Surgery (Clinical Surgery).

Harry A. Curtis, B.S. (Ch.E.), M.A., Assistant Professor of Chemistry.

*Hugh Butler, Lecturer on Common Law Pleading.

Robert S. Morrison, Lecturer on Laws of Mines and Mining.

Charles S. Thomas, LL.B., Lecturer on Law of Evidence.

Lucius M. Cuthbert, M.A., LL.B., Lecturer on Roman Law.

John A. Riner, LL.B., Lecturer on International Law.

Charles D. Hayt, Lecturer on Law of Taxation.

Willard J. White, M.A., M.D., Lecturer on Medical Jurisprudence.

Ernest L. Williams, LL.B., Lecturer on Appellate Procedure.

James W. McCreery, Lecturer on Law of Irrigation and Water Rights.

John E. Robinson, Lecturer on Bankruptcy.

Edward Delehanty, M.D., Lecturer on Neurology.

Oliver Lyons, M.D., Lecturer on Genito-Urinary Diseases.

Alfred R. Seebass, Ph.G., M.D., Lecturer on Life Insurance Examinations.

Harry S. Silverstein, B.A., Lecturer on Criminal Procedure.

William MacLeod Raine, B.A., Lecturer on Journalism.

Alfred W. Ainsworth, Research Assistant in Electrical Engineering.

---

*Died, June 27, 1912.

Henry E. Lutz, LL.B., Lecturer on Equity Pleading and Practice.
Fordyce P. Cleaves, M.A., Instructor in Oratory.
Fred G. Folsom, B.A., LL.B., Instructor in Law; Judge of Practice Court.
Edward B. Trovillion, M.D., Instructor in Anatomy.
Frank R. Spencer, B.A., M.D., Instructor in Ophthalmology and Oto-laryngology.
William R. Brackett, B.A., Instructor in Physics.
Guy W. Smith, B.S. (E.E.), M.S., Instructor in Engineering Mathematics.
Harland C. Woods, C.E., Instructor in Engineering Drawing.
Clay E. Giffin, B.A., M.D., Instructor in Surgery.
*Henry S. Denison, B.A., M.D., Instructor in Medicine.
Elva Cooper, M.A., Instructor in Mathematics.
William V. Casey, Instructor in Education.
John W. Amesse, M.D., Instructor in Medicine.
S. Griswold Morley, Ph.D., Instructor in Romance Languages.
Charles F. Poe, M.A., Instructor in Chemistry.
Clarence B. Ingraham, B.Ph., M.D., Instructor in Obstetrics.
Paul M. Dean, M.A., Instructor in Chemistry.
Whitney C. Huntington, C.E., Instructor in Civil Engineering.
Ethel R. Ford, B.A., Instructor in English.
Carl M. Duff, B.S. (C.E.), M.S., Instructor in Engineering Mathematics.
Max M. Ellis, Ph.D., Instructor in Biology.
Arthur G. Vestal, B.A., Instructor in Biology.
Samuel S. Kingsbury, Ph.D., Instructor in Education.
J. Warren Stehman, M.A., Instructor in Commerce.
Frank S. Bauer, B.S. (M.E.), Instructor in Mechanical Engineering.
Herbert D. McCaslin, B.S. (M.E.), Instructor in Mechanical Engineering.
Tracy R. Love, B.Ph., M.D., Instructor in Physiology and Pharmacology.
Philip Hillkowitz, B.S., M.D., Instructor in Medicine (Serum Therapy).
Donald McFayden, M.A., B.D., Instructor in Greek and in History.
William E. Dittman, C.P.A., Instructor in Accounting.
Lorena Underhill, M.A., Instructor in Philosophy.

---

*Died, August 24, 1912.

PHILIP G. WORCESTER, M.A., Instructor in Geology.
VICTORIA H. HAZLITT, B.A., Instructor in Education.
RUTH M. SHELLEDY, M.A., Instructor in German.
FRANK L. BROWN, B.S. (C.E.), Instructor in Civil Engineering.
WILLIAM BETHKE, M.A., Instructor in Economics.
GEORGE N. ROHWER, B.A., Instructor in Chemistry.
LEONARD P. FOX, M.A., Instructor in History.
JOHN H. V. FINNEY, B.S. (E.E.), Instructor in Physics.
JESSIE HUTSINPILLAR, M.A., Instructor in English.
MARIE SORENSON, M.A., Instructor in English.
JOHN GUTKNECHT, B.A., Instructor in English.
WILLIAM F. BAUR, B.Ph., Instructor in German.
LYNN R. LEONARD, B.S. (E.E.), Instructor in Electrical Engineering.
CHARLES G. MARTINSON, B.A., B.S. (M.E.), Instructor in Mechanical Engineering.
IVAN C. CRAWFORD, B.S. (C.E.), Instructor in Civil Engineering.
LOUIE CROFT BOYD, R.N., Instructor in Principles of Nursing.
HOMER S. MCMILLIN, B.A., Instructor in Education.
B. HOWARD JACKSON, M.E., M.A., Instructor in Chemistry.
WILLARD C. MACNAUL, M. A., Instructor in Economics (*ad interim*).
OSCAR DAHLENE, B.S. (M.E.), Instructor in Mechanical Engineering.
MAUD CRAIG, B.A., Assistant in Latin and in Greek.
GEORGIA L. FIELD, M.A., Assistant in English Literature.
CARL E. SALOMON, M.A., Assistant in English Literature.
CLARIBEL KENDALL, B.A., Assistant in Mathematics.
IDA M. JOHNSON, B.A., Assistant in Romance Languages.
ESBON Y. TITUS, Assistant in Chemistry.
ELOIE C. DYER, B.A., Assistant in History.
CORNELIUS J. MARVIN, Assistant in Physics.
NORMA E. LEVEQUE, Assistant in Education.
ESTELLE M. KYLE, Assistant in Education.
S. ELIZABETH LOYD, Assistant in English.
HELEN HUNTER, B.A., Assistant in English.
CAROLINE L. HABERMANN, B.A., Assistant in German.
EDNA M. REYNOLDS, B.A., Assistant in Psychology.
ROSE GANSON, Assistant in Psychology.
OBIE SUE PULLIAM, Assistant in Psychology.
JAMES W. BELL, B.A., Assistant in Economics.

WALTER F. MALLORY, Assistant in Mechanical Engineering.
CLARENCE J. DIEHL, Assistant in Engineering Drawing.
HARRY D. MCKINNEY, Assistant in Engineering Drawing.
THOMAS F. WALKER, Assistant in Pathology.
CONSTANTINE F. KEMPER, B.A., Assistant in Bacteriology.
EDITH K. ROSS, Assistant in Pathology.

FRED E. HAGEN, B.A., Secretary and Registrar.
C. HENRY SMITH, B.Ph., Librarian.
FAITH E. FOSTER, B.A., Assistant Librarian.
ELIZABETH M. PHILLIPS, Assistant Librarian.
EMMA A. JACKSON, B.A., Assistant Librarian.
FLOYD B. ODLUM, Assistant in Library.
FRED W. VARNEY, Assistant in Library.
EUGENE A. BOND, Law Librarian.
DUDLEY I. HUTCHINSON Assistant Law Librarian.
GEORGE H. SHAW, Assistant Law Librarian.
FRANK R. CASTLEMAN, B.S., Director of Physical Training and Athletics.
EDNA POTTER, Instructor in Gymnasium.
ELVA COOPER, M.A., Assistant in Gymnasium.
DUDLEY I. HUTCHINSON, Assistant in Gymnasium.
HOWARD A. DEMARIAS, Assistant in Gymnasium.
MARY A. LAKE, M.D., Physical Examiner for Women in Gymnasium.
JOSEPH KLEMME, Superintendent of Buildings and Grounds.

GENERAL STATEMENT

ESTABLISHMENT

The Constitution of the State of Colorado provides for the election, by the people at large, of a Board of Regents of the State University, and defines its duties as follows: "*The Board of Regents shall have the general supervision of the University, and the exclusive control and direction of all funds, and appropriations to, the University.*" The President of the University is *ex officio* a member of the Board of Regents and its presiding officer. The laws providing for the government and maintenance of the University were passed by the General Assembly of Colorado, March 15, 1877. Its object, as defined by that act, is "*To provide the best and most efficient means of imparting to young men and women, on equal terms, a liberal education and thorough knowledge of the different branches of literature, the arts and sciences, with their varied applications.*"

HISTORY

The University of Colorado was incorporated by an act of the Territorial Legislature of 1861, and the location fixed at Boulder. In 1872 three public-spirited citizens gave the University fifty-two acres of land adjoining the city. In 1874, the Territorial Legislature appropriated $15,000, and the citizens of Boulder contributed a like sum in cash. In 1875, Congress set apart and reserved seventy-two sections of the public lands for the support of the State University. In 1876 the Constitution of Colorado provided that upon its adoption the University at Boulder should become an institution of the State, thus entitling it to lands appropriated by Congress, and further made provision for the management and control of the University. The first General Assembly of the State provided for its permanent support by the levy of a tax of one-fifth of a mill upon the property of the State; also, for a fund to be secured by the sale of lands granted by the United States. In 1903, the General Assembly increased the annual levy from one-fifth to two-fifths of a mill.

The Institution was opened September, 1877, with two departments, Preparatory and College. The Medical School was opened in 1883. In September, 1892, a Law School was established, Graduate courses were first formally offered, and the gradual withdrawal of

the Preparatory classes from the University was begun. The College of Engineering was opened in 1893. The Summer Session was established in 1904. In September, 1906, a College of Commerce was established. The Preparatory School was discontinued in 1907. The Department of Education was organized as a College of Education in 1908. The School of Pharmacy was opened September, 1911. University Extension work was first formally begun in September, 1912.

The University is supported by the proceeds from a two-fifths mill tax, and by special appropriations.

LOCATION

The University is located at Boulder, a thriving city of twelve thousand inhabitants, about thirty miles north from Denver. The campus is situated on an elevation on the south side of the city and commands to the east a view of Boulder Valley, dotted with numerous small lakes, a rich agricultural and fruit-raising district. To the west a mile distant are the foothills, the boldest and highest of the range, and beyond is seen the ever snow-capped summit of Arapahoe Peak. In the canons and along the mountain roads, the scenery is grand and beautiful. To the north is Long's Peak, rising nearly fifteen thousand feet above sea level, while to the south is a series of beautiful mesas extending from the foothills. A trip on the Denver, Boulder & Western Railroad, extending thirty miles into the mountains, is a favorite excursion for tourists. The healthfulness of the climate of Colorado is well known. The city is located on that plateau east of the Rocky Mountains which "has the finest climate in the world." The dry air and almost continuous succession of bright, cloudless days make Boulder a very desirable location for residence. Many young men and women who have been compelled to leave college both in the East and South, on account of ill health, are able to pursue their studies here without interruption. The altitude of Boulder is 5,335 feet above sea level.

CHAUTAUQUA

The Colorado Chautauqua is located in Boulder. The sixteenth session will open July 4 and continue until August 15. A summer school is connected with the Chautauqua. Lecturers and instructors of national reputation are employed. The previous sessions have been remarkably successful in point of attendance and excel-

lence of programme. The spacious grounds are excellently located and offer cottage and tent accommodations for summer visitors. An illustrated descriptive booklet will be sent free on request. The secretary is Mr. F. A. Boggess, Boulder, Colorado.

BUILDINGS

Heating, Lighting and Power Plant—A central plant, furnishing heat, light and power for the campus is situated east of the Shops Building. It contains a boiler room forty by seventy-four feet and an engine room fifty by eighty-six feet. The structure is built of stone. A concrete tunnel 1,700 feet in length has been built from the power plant to distributing points on the campus. This tunnel contains all pipes and wires necessary for heating, lighting and power purposes.

Macky Auditorium—The funds for the erection of this building were provided by the will of the late Andrew J. Macky. The estimated cost is $300,000. The building is of red sandstone with gray Bedford stone trimmings. It is two hundred and thirty-four feet by two hundred and sixty-four feet in plan. The style of architecture is English Collegiate. The wings and exterior work on the central portion have been completed, and the wings are now in use. The administrative offices occupy the west wing; two college departments and the Art Room occupy the east wing. Work is in progress on the interior of the auditorium proper. The basement under the whole structure will be finished to accommodate large University and student functions.

Library Building—The Library Building is a two-story structure, built of gray brick and white standstone. The central portion is sixty-five by one hundred and fifteen feet. Two wings are to be added.

Woodbury Hall—This building is three stories in height above the basement, and is constructed of gray and red sandstone. It is heated by steam and supplied with hot and cold water, bath rooms, etc. The rooms are in suites of three rooms each—a sitting room for study, twelve by fourteen feet, and two bed rooms, each ten by twelve feet, with commodious closets.

Woman's Building—The Woman's Building is a two-story brick structure, containing the offices of the Dean of Women, the Woman's League, and the Young Women's Christian Association. There are

also a large club room and a kitchen. The upper floor contains twelve bed rooms.

MEN'S BUILDING—This is a two-story brick building, containing the offices of the Associated Students, the Silver and Gold, the Young Men's Christian Association, and meeting rooms for committees.

GYMNASIUM—The Gymnasium Building is of such dimensions that it may be used on occasions as a general assembly hall. The building is well heated, ventilated and lighted, and contains a large exercise room, dressing rooms, shower baths, lockers etc. It is equipped with the usual appliances.

PRESIDENT'S HOUSE—This is a two-story brick house of ten rooms.

LIBERAL ARTS BUILDING—The Liberal Arts Building is a four-story brick structure, containing the administrative offices of the Colleges of Liberal Arts and Education, lecture and recitation rooms, and the chapel.

PHARMACY BUILDING—This building is a two-story brick structure.

HALE SCIENCE BUILDING—The Hale Science Building is a four-story building of stone, sixty by one hundred feet in plan, with two wings, each fifty-one by fifty-two feet in area and two stories high. The second or main floor in the wings contains two lecture rooms, each with a seating capacity of over two hundred students. The entire lower story is occupied by the physics department; the second story of the central part by the mathematical and romance languages departments; the third by the biological and zoological departments.

CHEMISTRY BUILDING—The Chemistry Building is constructed of red pressed brick, trimmed with red sandstone, and contains two stories and a basement. It is forty by one hundred and twenty-five feet in plan with a wing forty by sixty feet.

NEW SCIENCE AND MUSEUM BUILDING—One wing of a Science and Museum Building was completed in January, 1911. The plan of the entire building is two hundred and twenty-five by one hundred and twenty-one feet. This is to be devoted to Geology, Biology, and the Museum.

ENGINEERING BUILDING—A two-story brick building with basement is devoted to the use of the College of Engineering. The build-

ing is one hundred and seventy-seven by eighty-five feet in plan. It is designed with special reference to engineering work, and is well fitted with machinery and instruments.

Shops Building—The Shops Building is located at the extreme east end of the campus, covering a space ninety-three by one-hundred and twenty-two feet. It is built of red brick and sandstone. The first, or front section, is two stories, with wood shops on the first floor and drawing rooms on the second floor; the remaining portion is one-story, containing the machine shop, forge shop, and foundry. All the rooms are well lighted, heated, and ventilated, and the most modern construction is used throughout.

Medical Building—The Medical Building is a brick structure, consisting of a central portion and three wings. It contains lecture rooms and laboratories for pathology, bacteriology, practical physiology, pharmacology, and the Henry S. Denison Research Laboratory. Adjoining is a temporary structure for anatomy.

Medical Building (in Denver)—The Medical Building in Denver is a three-story and basement stone building, located at the corner of Thirteenth and Welton Streets. It is exceptionally well located for its purpose. It contains two lecture rooms, laboratories for work in pathology and the various branches of clinical diagnosis, smaller rooms for section and demonstration work, and rooms for the several departments of the Dispensary.

Hospital—The Hospital is a three-story brick building, situated on the bluff overlooking the creek, city and surrounding country. In plan and equipment it is in every way modern and complete.

Nurses' Home—The Nurses' Home is a one-story frame cottage, situated west of the Hospital. It contains eight rooms, and is well adapted in every way to its purpose.

Simon Guggenheim Law Building—Donated by Senator Simon Guggenheim. This is a three-story building of gray brick and gray sandstone, one hundred and fifteen by fifty-two feet in plan. It contains class rooms, offices, moot court room and library, and is planned exclusively for the School of Law.

LIBRARY

The Library consists of 66,787 bound volumes; also 35,000 pamphlets, and 1,426 maps; besides a mass of unbound material, the accumulation of years, which is being catalogued as rapidly as

possible. The library system is composed of the main library and fourteen department branch libraries. Direct access to shelves is the rule. The main library is open to all during term time from 7:45 a. m. to 10:00 p. m., week days, except Friday and Saturday, when the closing hour is 9:00 p. m. During vacations the hours are 9:00 a. m. to 5:00 p. m., week days. It is closed on legal holidays.

The main library occupies the central portion of the Library Building, erected in 1903. The plans contemplate lateral wings for a large reading room on the one side and seminar rooms and cataloguing rooms on the other, and an addition in the rear for stack room. The library is equipped with two tier steel stacks with a capacity of 30,000 volumes. As this shelving has been outgrown, temporary wooden stacks have been built in the basement with a capacity of 20,000 volumes. Two hundred and seventy-five people may be seated at the different reading tables at one time. Books for frequent reference line the east wall. Current general periodicals are arranged along the west wall. A card catalogue containing upwards of 110,000 cards, giving authors and subjects, is accessible for reference. The well lighted basement contains the newspaper reading room, with sixty dailies and a collection of bound newspapers, a library work room, the tables reserved for use by the debating squad, and the temporary book stacks. Alcoves for seminar work are provided in the two balconies.

The Library is a designated depository for United States Government publications and receives a copy of each document of a public nature. It also receives the publications of the Carnegie Institution of Washington, D. C.

The staff consists of the Librarian, three trained assistants and two student assistants, and in addition, a senior law librarian and two student assistants.

Through library extension the resources of the Library are freely offered to citizens of Colorado, a few features being: use of the reading room and books by townspeople of Boulder; preparation of lists for club papers; compiling bibliographies; forwarding material to high-school students to aid in preparation for debates, oratorical or essay contests; lending books to teachers for advancement in their profession; inter-library loans to smaller libraries; giving assistance to libraries in reorganizing or recataloguing; making up price lists of books for libraries; maintaining a bureau

of information to answer questions where information is not obtainable locally. A recent publication entitled, "List of Serials in the University of Colorado Library," comprising 2,800 titles, has been mailed to all libraries and high schools in Colorado to make better known the resources of the Library. The list is made up of publications which appear at regular intervals comprising magazines, bound and current; newspapers; U. S. Government, state and foreign documents; university publications; proceedings of learned societies; and library journals and bulletins. Books not immediately required for University purposes may be borrowed by responsible people upon assuming costs of transportation. Articles may be transcribed by competent copyists at a reasonable fee.

During the early weeks of the first semester freshmen in English courses are conducted through the Library by the Librarian and informed about the borrowing system, how to use the card catalogue, the shelf locations of the different classes of books, and the way to trace a subject through the periodical indexes, together with general information of library customs and usage.

A class in library science and practice is conducted by members of the staff, supplemented by lectures from invited members of the profession.

Inter-library loans for members of faculties and advanced students engaged in research work have been arranged for with the largest libraries of the country. Any book on any subject may now be secured.

The Library possesses bound files of most of the important general periodicals listed in Poole's Index and the Readers' Guide, and a comprehensive collection of encyclopædias, dictionaries and atlases, both American and foreign.

The periodical list is especially noteworthy. Besides a well rounded list of general cultural magazines the list includes 293 subscriptions to the leading scientific and technical magazines, chosen with a view of procuring the best periodical literature upon all branches of instruction offered by the University. The full lists of periodicals, etc., are as follows: Periodicals, 491; annuals, continuations, and occasional publications, 152; scientific and literary publications by exchange, 244; libraries contributing bulletins and publications, 51; newspapers, 66; other serials by gift, 276; total, 1,280.

The Law Library occupies room No. 31, Guggenheim Law Building. This spacious room on the second floor has adequate

shelving for the present collection of 4,340 volumes. This Library includes gifts of books from Hon. Moses Hallett, and the "C. I. Thomson Collection," numbering a thousand volumes, presented by Mrs. C. I. Thomson. The library has a complete set of the National Reporter System, English Reprints, English reports, American statutes, U. S. Supreme Court reports, sets of State statutes and reports, the better known digests, legal treatises and encyclopædias. These sets are constantly kept up to date by continuations. A growing collection of text-books on the law is constantly consulted. A very complete file of the Colorado Supreme Court and the Colorado Court of Appeals briefs is at hand. Sets of bound law magazines and authoritative current legal periodicals are on file. The Library is open ten hours each week-day under the supervision of a senior law librarian and two student assistants. A subject card catalogue is provided.

The Engineering Library in room 27, Engineering Building, contains the literature of civil, electrical and mechanical engineering, and engineering drawing. Sets of proceedings of the leading engineering societies, and bound sets of standard periodicals with the current numbers of forty magazines, and a select collection of texts upon engineering subjects form a useful working library.

The Medical Library is temporarily shelved in the north balcony of the Library Building. The collection is well balanced, and is increasing through gifts and purchases. The major portion is composed of text-books. Several sets of bound medical magazines are at hand, together with the current numbers of fifty of the leading American and foreign medical journals. The medical books donated to the Henry S. Denison Research Laboratory, with a special card catalogue, have been deposited in the Medical Building.

A selection of medical books has been withdrawn from the general collection for the use of the School of Medicine in Denver.

Additional department libraries are maintained for Biology, Chemistry, Education, Geology, German, Mathematics, Physics, and the Museum.

THE UNIVERSITY PUBLICATIONS

1. Catalogue, published in March, containing general information about the University and its separate departments.
2. Summer Session Catalogue.
3. The special announcements of the Departments of Medi-

cine, Law, Engineering, Education, and of the Graduate School, published in June.

4. The biennial report of the Regents of the University, recording the progress of the Institution during the previous biennial period, and showing the University budget of receipts and expenditures for the same period. Published biennially in October.

5. The University of Colorado Studies, published at irregular intervals, and containing original contributions by members of the University Faculties.

6. Medical Bulletin, published by the Medical Department.

7. University Extension Bulletins on various subjects of investigation.

8. The Booklet of Views, containing half-tone cuts of the buildings and grounds.

9. The University News-Letter, published at intervals of three months, and containing current news of the University.

10. General Catalogue of the Officers, Members of the Faculties, and Graduates of the University from the opening of the Institution, published triennially.

11. The Commencement Addresses, containing the Baccalaureate Address and the Commencement Oration, published in June.

These publications may be obtained by application to the Secretary of the University.

STUDENT PUBLICATIONS

The Silver and Gold, a tri-weekly paper, named after the University colors, and a monthly literary magazine, called *The Colorado Magazine*, are published by the students.

The Coloradoan, an annual, is published by each Junior Class.

The Journal of Engineering is published annually, and *The Colorado Engineers' Magazine*, quarterly by the students of the College of Engineering.

The University of Colorado Hand-Book is published annually by the Christian Associations.

The Civic Quarterly is published by the Civic Club.

THE UNIVERSITY SCIENTIFIC SOCIETY

The University Scientific Society was founded in 1888, for the purpose of affording a common meeting ground for all those interested in scientific subjects—students and townspeople, as well as the

members of the University faculty. The growth of the more specialized scientific societies rendering necessary a reorganization in 1907, the constitution was changed to meet the need felt for a society in which topics of a more general interest could be discussed. Regular meetings of the Society are held every Monday evening at eight o'clock. The papers read before these meetings are intended to set before the members some of the results of modern investigation in literature, language, and history, as well as in more strictly scientific work in the natural sciences.

HONOR SOCIETIES

Three honor societies, to which students of high scholastic standing are eligible, have chapters at the University of Colorado. Phi Beta Kappa elects to membership senior students in the College of Liberal Arts. Sigma Xi offers membership to graduate and under-graduate students who have shown special ability in scientific investigations. Tau Beta Pi is a technical society, selecting members from students in the College of Engineering.

STUDENT LITERARY SOCIETIES AND CLUBS

Literary societies and debating clubs are organized and conducted each year by the students.

The Richard's Literary Society comprises in its limited membership both men and women, and aims to promote all dramatic, oratorical, and literary activities. It maintains yearly a series of inter-school debates and open meetings, and takes part in the celebration of national holidays.

The Scribblers' Club aims to develop talent in original literary work. Meetings are held every two weeks, the programmes consisting entirely of poems, essays, sketches, or stories written by the members. Membership is open to both men and women.

The University of Colorado Debating Society was organized for the purpose "of cultivating a correct mode of speaking and qualifying its members by practice to express their opinions in public in a correct manner." The Society spends most of its time in senate and parliamentary practice. Membership is open to men of the University who are interested in debating and oratory.

The Scoop Club limits its membership to students who have had experience in newspaper reporting.

The Civic Club, composed of students interested in political and

governmental problems, is a member of the Intercollegiate Civic League. This club publishes the Civic Quarterly.

The History Conference Club is composed of students and instructors in the Department of History. Its meetings are devoted to a study of historical problems and of contemporary history.

The University Dramatic Club is organized for the purpose of promoting dramatic study and gives one or more public presentations during the year.

The University of Colorado Graduate Club is organized for literary and scientific discussions.

The Civil Engineers' Society, the Electrical Engineers' Society —a student branch of the American Institute of Electrical Engineers and the Mechanical-Chemical Society have been organized by the students in the College of Engineering. These societies meet every two weeks. In each original papers on questions of technical interest are presented and discussed. These three societies joined as "The Associated Engineering Societies" publish the Journal of Engineering and the Colorado Engineers' Magazine.

MUSICAL ORGANIZATIONS

The University double quartet and the instrumental quintet make an annual tour of the state during the spring vacation.

The University band of twenty-five members furnishes music for the various general University functions, also giving a concert in the Spring in connection with the other musical organizations.

All musical organizations are under the direction or general supervision of the Professor of Music, members being selected by competitive examinations.

CHRISTIAN ASSOCIATIONS

The Young Men's Christian Association and the Young Women's Christian Association have organizations in the University, which are open to members of the faculties and to students of all departments.

Religious services and meetings for the presentation of the moral and religious problems of the day are held by each Association. Classes for the study of the Bible and world-wide missions are conducted by each under competent leadership. Vesper services are held in the Chapel. In providing frequent social gatherings the Associations render important service.

Resident secretaries are employed by the Associations, and their services are at the disposal of prospective students and their friends. A copy of the Students' Handbook, which is issued by the Associations and is descriptive of life at the University, is sent upon request.

The Y. W. C. A. conducts a board and room register, a book exchange, and a self-help bureau for the women at the opening of each school year. The Y. W. C. A. offices are in the Woman's Building and are open at all times to the women of the University.

The Y. M. C. A. has offices in the Men's Building. Permanent employment bureau, information bureau, and headquarters for men are maintained here. The Student and Faculty Directory is published by the Y. M. C. A.

Church attendance is optional, but students are advised to attend some one of the numerous churches in town. The churches in Boulder are Baptist, Catholic, Christian, Christian Science, Congregational, Episcopal, Lutheran, Methodist, Presbyterian, Seventh Day Adventist, Seventh Day Baptist, Swedish Baptist and Swedish Lutheran.

CHAPEL EXERCISES

The period from 11:00 to 11:30 is set apart for daily assembly of students. During this period no class or lecture work is conducted.

On Monday, Tuesday, Wednesday, and Thursday, the attendance is required for the first, second, third, and fourth chapel divisions, respectively, and a brief address is given by a member of the Faculty or by some speaker invited for the occasion. The attendance on other days is voluntary. On Friday, after Scripture reading and a hymn, time is allowed for various student meetings.

HIGH-SCHOOL DAY

The observance of High-School Day has been made one of the regular features of the academic year. The purpose of this day is to afford to the senior students of the high schools an opportunity of visiting the State University, inspecting its buildings and grounds and so far as possible learning the scope and spirit of its life and work. The railroads make special rates for High-School Day, and thus place a visit to the University within the reach of most of the high-school students of the State.

ASSOCIATED ALUMNI

The University of Colorado Alumni Association was organized in 1882. Its purposes are to aid in promoting the interests of the University, and to cultivate sociability and good fellowship among its members. In 1911 a new constitution and a new form of organization were adopted. Legislative and executive powers are vested in an Alumni Senate, at present composed of twenty-seven members, ten of whom represent the alumni at large, and the others local alumni associations in the principal towns and cities of Colorado and larger cities in other states. The constitution provides, through the initiative and referendum, for united action of the alumni. A monthly magazine is published by the Association. Annual meetings are held at the University on Alumni Day and during commencement week. The officers of the Senate are: Jesse J. Laton, 1903, President; May Fuller Sickman, 1896, Vice-president; G. Blake Warner, 1909, General Secretary; and Alva A. Paddock, 1910, Treasurer.

THE ASSOCIATED STUDENTS

The student body is organized into an association known as "The Associated Students of the University of Colorado." Through this Association the students act collectively in all their University relations. There are three executive boards—the Commission, the Athletic Board and the Debating Board. The Commission controls general interests and the other two boards the activities indicated by the names; together they appoint the general manager who has direct control of, and responsibility for, every student enterprise of general interest. By the payment of a $5.00 fee any student, alumnus, or member of the faculties is entitled to admission to all local contests, games or other events under the Association's auspices. Provision is made in the Constitution for a careful supervision of student funds, for the recall of any officers, and for the initiative and referendum.

The officers for the present year are: President, Bernard J. Seeman, B.A.; Vice-president, Eugene A. Bond; Secretary, Dorothy Chittenden; General Manager, Alva A. Paddock, B.A.; Yell-master, George H. Shaw. The members of the Commission are the president, the vice-president, the secretary, and the yell-master and Professor John B. Ekeley, Frank J. Gartland, Ray R. Taylor, Sam Parlapiano, and Ralph R. Andrus. The members of the Athletic Board are Profes-

sors Oliver C. Lester and John A. Hunter, Assistant Professor Harry A. Curtis, and the president of the Associated Students, Eugene A. Bond, and Ralph R. Andrus. The members of the Debating Board are Professors John S. McLucas, William H. Pease, and Charles C. Ayer, and the president of the Associated Students, Frank J. Gartland, and Sam Parlapiano.

ORATORICAL AND DEBATING INTERESTS

Public debates and oratorical contests are held under the management of the Debating Board of the Associated Students. This Board, which consists of three faculty and three student members, has power to regulate all debating and oratorical contests—inter-class, inter-school, and inter-collegiate.

Annual debates are held with other universities. The University of Colorado is a member of a triangular league with the universities of Missouri and Texas, and of another with the universities of Kansas and Oklahoma; it also holds an annual debate with the University of Utah. The place of meeting alternates between Boulder and the seats of the other universities. The debating teams in these inter-collegiate debates are chosen each year, by contest, from the membership of the class in debating. The teams and alternates constitute a squad of twenty men, who are under the direct supervision of the instructor in debating.

The Debating Board conducts each year an oratorical contest, in which cash prizes are offered.

The University of Colorado Debating Society and the Richards Literary Society hold an annual debate, contending for a handsome silver trophy cup.

Commemoratory exercises, under the auspices of the Associated Students, are held on the national holidays that fall within the academic year. There are always representatives of the students on the programmes.

THE BENNETT PRIZE

The Bennett prize is awarded annually at Commencement for the best essay on *The Principles of Free Government.* Any student in the University may compete. The prize awarded is the income of the sum of $400 presented to the Regents of the University by Hon. William J. Bryan, Trustee for Philo Sherman Bennett.

PHYSICAL TRAINING AND ATHLETICS

Systematic training in physical culture is given in formal gymnasium classes and in the main branches of in-door and out-door athletics. All these are under the competent supervision of the Director of Athletics and his staff of assistants. A graduate medical attendant and a special gymnasium are provided for women.

For the most part athletic training is on a voluntary basis, but a formal course in physical culture is required of the freshman class in the College of Liberal Arts.

The climate is such as to make out-of-door recreation and games agreeable during most of the year. An able staff of coaches and assistant coaches furnishes excellent training in football, baseball, basketball, cross-country running, and track and field sports.

It is the purpose of the University to stimulate interest in the greatest possible variety of wholesome athletics. The policy of developing highly specialized intercollegiate teams is subordinated to that of providing suitable forms of corrective and upbuilding exercise for all students. With this end in view an increasing amount of attention is given to those forms of exercise which can be continued conveniently and profitably in later life. Walking and mountain climbing clubs have been organized and encouraged. The Associated Students now maintain a number of tennis courts on which the game can be enjoyed during most of the year. Tournaments are held each spring and fall and this fine exercise is deservedly becoming more and more popular.

The present athletic field being inadequate, the University has recently acquired twelve acres north and east of the campus, and just across Boulder Creek. To this field—to be known as Stratton Field—additions may be made by later purchase. This new playground has the advantage of being not far from the center of the campus; it is beautifully situated along the shady river bank, and will be large enough to give ample room for all the various college sports.

Athletics—especially inter-collegiate athletics—are placed on a stable financial foundation under the organization of the Associated Students of the University.

General supervision and direction of athletics is vested in the Athletic Board, composed of three members of the Faculty, appointed by the President of the University, and three student members, who are officials of the Associated Students. This Board is responsible in all things to the University Senate.

DEAN OF WOMEN

The Dean of Women devotes most of her time to the interests of the women students of the University. Miss S. Antoinette Bigelow, formerly of Wellesley, was appointed Dean of Women in September, 1910.

WOMAN'S LEAGUE

The Woman's League, a voluntary association composed of the women students of the University, was established in 1895. It has a two-fold purpose: First, to promote the social and intellectual welfare of the women of the University; and, secondly, to establish a loan fund for the benefit of the women students. This fund is at present about one thousand dollars.

The Board of Control of the League consists of an Executive Committee, made up of the following officers: President, First and Second Vice-Presidents, Corresponding Secretary, Recording Secretary, Treasurer, and Chairman of the Entertainment Committee. These officers are elected in the last month of the school year. Each officer appoints a committee to help her, and these committees welcome the women students who are new-comers to the University, and extend to them a helping hand whenever needed. There is also an Advisory Board, chosen from the wives of members of the Faculty, who meet with the Board of Control every month, and assist them in planning the entertainments and other work of the League.

The Woman's Building furnishes headquarters for the women of the University. Here are the offices of the Dean of Women, the Woman's League, and the Young Women's Christian Association. There is a hall for meetings and entertainments.

ENTRANCE

Students on arrival at the University may obtain information concerning rooms and board at the Secretary's office in the Macky Auditorium. Usually the trains are met by representatives of the Christian Associations. The Y. W. C. A. and Woman's League rooms in the Woman's Building are open for the reception of women students during the opening days of the University.

The office is open for registration, beginning Friday morning preceding the opening day of the University. All students are requested to register as soon as possible after their arrival.

REQUIREMENTS FOR ADMISSION

Candidates for admission are expected to be graduates of a standard four-year high or preparatory school, or to have completed a corresponding amount of work under other conditions. Matriculants in the School of Medicine and in the School of Law must also present two years of college work. (See below.)

Students may be admitted on the passing of satisfactory examinations or on the presentation of certificates from an accredited high school.

Applications from graduates of a non-accredited school will be considered as the merits of each case may warrant; but full standing in such instances shall be conditional upon the subsequent work of the student concerned.

Candidates twenty-one years of age, who cannot satisfy the admission requirements, but are qualified to pursue special work, may be admitted to certain courses on the approval of the proper committee of the faculty.

Certificates of moral character may be required from all applicants for admission.

Fifteen units are required for admission. Entrance conditions will not be allowed beyond the equivalent of two units. A unit course of study is defined as a course covering a school year of not less than thirty-six weeks, with five periods of at least forty-five minutes each per week, two periods of Manual Training or Labatory work being equivalent to one period of classroom work. This is equivalent to one hundred and eighty actual "periods" per unit. The fifteen units are equivalent to thirty "points."

Admission to the College of Liberal Arts, College of Commerce, College of Education, and School of Social and Home Service.

The candidate for admission should present fifteen units as follows:

Mathematics	2
Languages other than English	4
English	3
History	2
Science	2
Electives	2
	15

Electives may be chosen from the following: Mathematics, 2; Greek, 2; Latin, 2; French, 2; German, 2, Spanish, 2; History, 2; English, 1; Science, 2; Psychology, ½. From the following group, subject to special accrediting by the University, not more than three units: Drawing, 1; Manual Arts, 2; Domestic Science, 1; Agriculture (Introductory Science), 1; Commercial Geography, ½; Elementary Economics, ½.

All students who do not present the units specified in the above table of requirements for admission but who do present fifteen acceptable units, will be regularly admitted. Such students will, however, be required to elect in College courses that will fulfill the requirements specified, e. g., if a student enters with but two units of Language other than English, then he must include in his College course the equivalent of two units in foreign language. *This provision materially widens the scope of electives that will be accepted for College entrance.*

1. Half units will not be accepted in Physics and Chemistry.

2. Students who present three units of Greek are required to present only one unit of Science, but they must have a total of fifteen units.

3. For the foreign language requirement four units of Latin are preferred, at least two units urgently advised. Students intending to pursue the study of Latin in the University should present four units of Latin for entrance; those intending to pursue the study of Greek should present preferably three, at least two, units of Greek. It should be noted that matriculants in the School of Law must present two units of Latin; in the School of Medicine, one unit.

ADMISSION TO THE COLLEGE OF ENGINEERING.

Candidates for admission should present the following units:

Mathematics (Algebra, Plane and Solid Geometry)	3
Languages other than English, at least	2
English	3
History	2
Science (1 unit of Physics)	1
Electives	4
	15

The electives are the same as for the College of Liberal Arts.

Admission to the School of Medicine.

In addition to a regular four-year high-school course or equivalent, two years of college work, estimated at sixty semester hours, are required for admission. At least one unit of Latin must be presented for entrance. See page 205.

Admission to the School of Pharmacy.

A four-year high-school course or equivalent is required for admission to all courses. At least one year of Latin is prescribed. See page 231.

Admission to the School of Law.

In addition to a regular four-year high-school course or equivalent, two years of college work, estimated at sixty semester hours, are required for admission. This preliminary entrance requirement must include four units of language other than English, of which two at least must be Latin. See page 237.

Description of Units in English.

The National Conference on Uniform Entrance Requirements in English voted that the following requirement for the years 1913, 1914, and 1915 should be recommended to the constituent bodies for adoption:

Preparation in English has two main objects: (1) command of correct and clear English, spoken and written; (2) ability to read with accuracy, intelligence, and appreciation.

English Grammar and Composition.

The first object requires instruction in grammar and composition. English grammar should ordinarily be reviewed in the secondary school; and correct spelling and grammatical accuracy should be rigorously exacted in connection with all written work during the four years. The principles of English composition governing punctuation, the use of words, paragraphs, and the different kinds of whole composition, including letter-writing, should be thoroughly mastered; and practice in composition, oral as well as written, should extend throughout the secondary school period. Written exercises may well comprise narration, description, and easy exposition and argument based upon simple outlines. It is advisable that subjects for this work be taken from the student's personal experience, general knowledge, and studies other than English, as

well as from his reading in literature. Finally, special instruction in language and composition should be accompanied by concerted effort of teachers in all branches to cultivate in the student the habit of using good English in his recitations and various exercises, whether oral or written.

Literature.

The second object is sought by means of two lists of books, headed respectively *reading* and *study*, from which may be framed a progressive course in literature covering four years. In connection with both lists, the student should be trained in reading aloud and be encouraged to commit to memory some of the more notable passages both in verse and in prose. As an aid to literary appreciation, he is further advised to acquaint himself with the most important facts in the lives of authors whose works he reads and with their place in literary history.

a. Reading—The aim of this course is to foster in the student the habit of intelligent reading and to develop a taste for good literature, by giving him a first-hand knowledge of some of its best specimens. He should read the books carefully, but his attention should not be so fixed upon details that he fails to appreciate the main purpose and charm of what he reads.

With a view to large freedom of choice, the books provided for reading are arranged in the following groups, from which at least ten units* are to be selected, two from each group.

I. The Old Testament, comprising at least the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings, and Daniel, together with the books of Ruth and Esther; the Odyssey, with the omission, if desired, of Books I, II, III, IV, V, XV, XVI, XVII; the Iliad, with the omission, if desired, of Books XI, XIII, XIV, XV, XVII, XXI; Vergil's Æneid. The Odyssey, Iliad and Æneid should be read in English translations of recognized literary excellence.

For any unit of this group a unit from any other group may be substituted.

II. Shakespeare's Merchant of Venice; Midsummer Night's Dream; As You Like It; Twelfth Night; Henry the Fifth; Julius Cæsar.

---

*Each Unit is set off by semicolons.

III. Defoe's Robinson Crusoe, Part I; Goldsmith's Vicar of Wakefield; either Scott's Ivanhoe or Scott's Quentin Durward; Hawthorne's House of the Seven Gables; either Dickens' David Copperfield, or Dickens' Tale of Two Cities; Thackeray's Henry Esmond; Mrs. Gaskell's Cranford; George Eliot's Silas Marner; Stevenson's Treasure Island.

IV. Bunyan's Pilgrim's Progress, Part I; The Sir Roger De Coverley Papers in the Spectator; Franklin, Autobiography (condensed); Irving's Sketch Book; Macaulay's Essays on Lord Clive and Warren Hastings; Thackeray's English Humorists; Selections from Lincoln, including at least the two Inaugurals, the Speeches in Independence Hall and at Gettysburg, the Last Public Address, and Letter to Horace Greeley, along with a brief memoir or estimate; Parkman's Oregon Trail; either Thoreau's Walden or Huxley's Autobiography and selections from Lay Sermons, including the addresses on Improving Natural Knowledge, A Liberal Education, and a Piece of Chalk; Stevenson's Inland Voyage and Travels with a Donkey.

V. Palgrave's Golden Treasury (First Series), Books II and III, with especial attention to Dryden, Collins, Gray, Cowper, and Burns; Gray's Elegy in a Country Churchyard, and Goldsmith's Deserted Village; Coleridge's Ancient Mariner, and Lowell's Vision of Sir Launfal; Scott's Lady of the Lake; Byron's Childe Harold, Canto IV, and Prisoner of Chillon; Palgrave's Golden Treasury (First Series), Boox IV, with especial attention to Wordsworth, Keats, and Shelley; Poe's Raven, Longfellow's Courtship of Miles Standish, and Whittier's Snow-Bound; Macaulay's Lays of Ancient Rome, and Arnold's Sohrab and Rustum; Tennyson's Gareth and Lynette, Lancelot and Elaine, and The Passing of Arthur; Browning's Cavalier Tunes, The Lost Leader, How They Brought the Good News From Ghent to Aix, Home Thoughts From Abroad, Home Thoughts From the Sea, Incident of the French Camp, Herve Riel, Pheidippides, My Last Duchess, Up At a Villa—Down in the City.

b. Study—This part of the requirement is intended as a natural and logical continuation of the student's earlier reading, with greater stress laid upon form and style, the exact meaning of words and phrases, and the understanding of allusions. For this close reading are provided a play, a group of poems, an oration, and an essay, as follows:

Shakespeare's Macbeth; Milton's L'Allegro, Il Penseroso, and

Comus; either Burke's Speech on Conciliation With America, or both Washington's Farewell Address, and Webster's First Bunker Hill Oration; either Macaulay's Life of Johnson, or Carlyle's Essay on Burns.

MATRICULATION SCHOLARSHIPS

The pupil in each graduating class of an accredited high school of Colorado, who has maintained the highest record in studies is entitled to a scholarship in the University of Colorado, consisting of remission of the annual tuition, for four years in the Colleges of Liberal Arts, Commerce, Education or Engineering.

SPECIAL STUDENTS AND ADVANCED STANDING

Special students who wish to become candidates for a degree must fulfill all requirements for admission and complete the prescribed courses in the regular manner. See pages 41, 64.

Students coming from institutions of like grade should bring certificates definitely stating the amount of work done in each subject. Real equivalents will be accepted.

SCHOOLS SEEKING TO BE ACCREDITED BY THE UNIVERSITY OF COLORADO

The aim of the High-School Committee of the University is that the list of Accredited High Schools shall be in a sense a roll of honor, a list of schools whose standing is in no way doubtful. In pursuance of this ideal a school that is not well supported by its community, and strong in organization, in teaching force, in standards of scholarship, in equipment and in school tone and spirit cannot be placed or retained on the list. Wherever there is a reasonable doubt in respect to any of these particulars, the committee will feel justified in dropping any school from the list or in leaving it in the waiting class. One very practical criterion of the character of any high school is the number of students attending higher schools. The list will be revised each year in February. It is hoped that the following statements will help to a clearer understanding of the governing principles of the High-School Committee, and that they may indicate some specific aims for the guidance of school officers:

1. There should be in any community supporting a high school, something of enthusiasm for the school, some pride in it,

and a well-marked willingness, coupled with the ability to spend money and to spend it intelligently. The attitude toward the teacher should be one of consideration and cooperation.

2. The location and construction of the buildings; the lighting, heating and ventilation; the nature and care of lavatories, corridors, closets, water supplies, school furniture, and apparatus must be such as to insure hygienic conditions for both pupils and teachers.

3. The library, the laboratory and all other equipment must be adequate to the needs of instruction. They should be much more than barely adequate.

4. The teaching staff should consist of at least three teachers of academic preparation equivalent to that usually represented by the B.A. degree. They should have had some professional training and should have more than average enthusiasm for their work.

5. It is strongly advised that no teacher be required to teach more than five periods per day. No school will be considered which requires more than six periods of any teacher.

6. No school will be considered whose records show an abnormal number of pupils per teacher.

7. It is expected that there will be an earnest spirit of cooperation among the teachers, and between teachers and pupils, and that the intellectual and moral tone of the school will be high.

8. A school asking to be accredited should have been completely organized on foregoing basis long enough to have graduated classes for two years, and should have a creditable class for graduation in the year in which it makes its application.

9. The high school should have a sound and well-balanced course of study, and graduation from the school should be based upon not fewer than fifteen units.

*ACCREDITED SCHOOLS

Alamosa High School.
Arvada High School.
Aspen High School.
Bent County High School (Las Animas).
Berthoud High School.
Brighton High School.
Brush High School.

*Arranged in alphabetical order.

Canon City High School.
Central City High School.
Cheyenne County High School (Cheyenne Wells).
Cheyenne (Wyo.) High School.
Colorado City High School.
Colorado Springs High School.
Cripple Creek High School.
Delta High School.
Denver High School, East Side.
Denver High School, Manual Training.
Denver High School, North Side.
Denver High School, South Side.
Denver High School, West Side.
Douglas County High School (Castle Rock).
Durango High School.
Eaton High School.
Florence High School.
Fort Collins High School.
Fort Morgan High School.
Fruita High School.
Garfield County High School (Glenwood Springs).
Georgetown High School.
Golden High School.
Grand Junction High School.
Greeley High School.
Gunnison County High School (Gunnison).
Holly High School.
Huerfano County High School (Walsenburg).
Idaho Springs High School.
Lafayette High School.
Lamar High School.
Leadville High School.
Littleton High School.
Logan County High School (Sterling).
Longmont High School.
Louisville High School.
Loveland High School.
Manitou High School.
Monte Vista High School.
Montrose County High School (Montrose).
Otero County High School (La Junta).

Ouray County High School (Ouray).
Palisade High School.
Paonia High School.
Phillips County High School (Holyoke).
Pueblo High School, District No. 1.
Pueblo High School, District No. 20.
Rocky Ford High School.
Saguache County High School (Saguache).
Salida High School.
Sedgwick County High School (Julesburg).
Silverton High School.
South Canon City High School.
State Preparatory School, Boulder.
Telluride High School.
Trinidad Public High School.
Victor High School.
Wheat Ridge High School (Edgewater).
Windsor High School.
Miss Wolcott's School, Denver.
Wolfe Hall, Denver.
Yuma County High School (Wray).

DORMITORIES

Students living on the campus are subject to the following rates: Unfurnished rooms, including heat and light, men's dormitory, $3.00 per month for each student (care of room included); the woman's building, $3.00 per month for each student. Room rent must be paid in advance for each semester.

Rooms will be assigned to the three upper classes of the University at the end of the year in the order of seniority. The remaining rooms will be assigned at the beginning of the fall semester. Students who have engaged rooms must occupy them as early as the first day of the semester, or present satisfactory excuse for absence to the Secretary; otherwise they will be considered as not engaged. Occupants of rooms will be held responsible for damage. Before taking possession of rooms in the men's dormitory, each student will deposit with the Secretary of the Board of Regents $5.00. This deposit will be returned upon vacating the room, less such portion thereof as may have been set aside for repairing damages. Facilities for obtaining furniture and supplies are abundant in Boulder, and the rates are reasonable.

The women's dormitory is under the supervision of a matron. The men's dormitory is governed by a House Committee, elected by the students residing there; this committee acts in conjunction with a committee of the Faculty.

EXPENSES

Students not living on the campus may obtain room and board in private families at $4.00 a week and upward. These rates may be greatly reduced by the formation of students' boarding clubs. Recently a statement of expenses at the University was asked from the students. The items included room, board, laundry, books, and all other expenses except fees, tuition in the professional schools, railroad fare and clothing. Out of the whole number making returns one per cent. reported an annual expenditure of less than $125; fourteen per cent. of less than $200; sixty-four per cent. of less than $350; and eighty-nine per cent. of less than $500.

SPECIAL RAILROAD RATES

The Colorado & Southern Railway and The Denver and Interurban Railway sell students' commutation tickets at the following rates:

8-RIDE TICKETS—30-DAY STUDENTS' COMMUTATION.

From Boulder, Colo., to	Rate.
Berthoud, Colo.	$3.25
Denver, Colo.	4.00
Longmont, Colo.	2.80
Loveland, Colo.	4.50
Niwot, Colo.	2.00
Fort Collins, Colo.	6.55

The limit of these tickets is 30 days from date of sale, and they are not extended on any account, nor is any unused portion of them redeemed.

These tickets will be sold only on presentation of students' identification card (permit form 4), properly signed by the Secretary of the State University, to the person named thereon, and will only be good when presented with such permit and only for the transportation of the student named thereon.

Other commutation rates are also made for daily trips between above-named stations.

TUITION AND FEES*

COLLEGES OF LIBERAL ARTS, COMMERCE, AND EDUCATION, AND SCHOOL OF SOCIAL AND HOME SERVICE.

Matriculation (paid once)	$ 5.00
Tuition, resident, per year	15.00
Tuition, non-resident, per year	25.00
Laboratory fees per semester, collected only from students who take the particular courses. [The following fees include breakage deposits, etc., as well as charges for material, hence are in part returnable, if the student exercises care.]	
Physics, all laboratory courses, 50 per cent. returnable	2.00
Chemistry (Lecture hours are not counted):	
General Inorganic, per credit hour, 25 per cent. returnable	3.00
Qualitative Analysis, per credit hour, 25 per cent. returnable	3.00
Organic Preparations, per credit hour, 25 per cent. returnable	3.00
All other courses, per credit hour, 25 per cent. returnable	1.50
Biology:	
Botany, any course, 25 per cent. returnable	2.00
Zoology, any course, 25 per cent. returnable	3.00
Histology and Embryology, 25 per cent. returnable	2.50
Education:	
Pedagogical library fee for each pedagogical course requiring duplicate books	$ 1.00
Teacher's registration fee	1.00

*Special breakage charges may be collected whenever necessary in any laboratory department of the University.

Geology (per year):
General Geology, 60 per cent. returnable..... 5.00
Determinative Mineralogy, 25 per cent. returnable 4.00
Advanced Mineralogy, 25 per cent. returnable 2.00
Quantitative Mineralogy, 25 per cent. returnable 6.00

GRADUATE SCHOOL.
Matriculation (required of graduates from other colleges, paid once) 10.00
Diploma fee 10.00

COLLEGE OF ENGINEERING.
Matriculation (paid once) 5.00
Tuition and fees, resident, per year..... 25.00
Tuition and fees, non-resident, per year..... 35.00

SCHOOL OF MEDICINE.
Tuition, per year 75.00

SCHOOL OF PHARMACY.
Tuition, per year 75.00

SCHOOL OF LAW.
Tuition, per year 50.00

INCIDENTAL FEE.
Annual fee for all students in all the colleges and schools (except the Denver Division of the School of Medicine, $2.50) 5.00

UNIVERSITY EXTENSION DIVISION.
Correspondence-Study, 40 lessons (5 hours' credit)....
.....$20.00 and pro rata
Study Classes, 2 hours a week, 36 weeks (4 hours' credit) 20.00
Special terms arranged for large classes.
Lectures—
Single .....$15.00 and expenses
Course (6) ..... 75.00 and expenses
Social Welfare .....Cost of service
Information, and Library Extension.....
.....Express charges or postage
Bulletins of Investigations.....Usually on request

COLLEGE OF LIBERAL ARTS

FACULTY

James H. Baker, M.A., LL.D., President.
Fred B. R. Hellems, Ph.D., Dean; Professor of Latin.
J. Raymond Brackett, Ph.D., Dean of the Graduate School; Professor of Comparative and English Literature.
Ira M. DeLong, M.A., Professor of Mathematics.
Charles C. Ayer, Ph.D., Professor of Romance Languages.
*George Norlin, Ph.D., Professor of Greek.
Francis Ramaley, Ph.D., Professor of Biology.
Melanchthon F. Libby, Ph.D., Professor of Philosophy.
John Bernard Ekeley, Ph.D., Sc.D., Professor of Chemistry.
Russell D. George, M.A., Professor of Geology.
Theodore D. A. Cockerell, Professor of Zoology.
George M. Chadwick, Professor of Music.
*James F. Willard, Ph.D., Professor of History.
Carl C. Eckhardt, Ph.D., Acting Professor of History.
Oliver C. Lester, Ph.D., Professor of Physics.
Frank E. Thompson, B.A., Secretary of the College of Education; Professor of Education.
Junius Henderson, B.A., Curator of Museum; Professor of Natural History.
John S. McLucas, M.A., Professor of English.
Grace Fleming van Sweringen, Ph.D., Professor of Germanic Languages.
Milo G. Derham, Ph.D., Director of Summer Session; Professor of Latin.
Lawrence W. Cole, Ph.D., Secretary of the School of Social and Home Service; Professor of Psychology.
Loran D. Osborn, Ph.D., Director of Extension; Professor of Sociology.
Frederick A. Bushee, Ph.D., Secretary of the College of Commerce; Professor of Economics and Sociology.

*On leave of absence, 1912-1913.

Ralph D. Crawford, M.A., Assistant Professor of Geology.
S. Antoinette Bigelow, M.A., Dean of Women; Assistant Professor of Literature.
Charles H. Williams, B.S. in Ed., B.A., Assistant Professor of Education.
Harry A. Curtis, B.S. (Ch.E.), M.A., Assistant Professor of Chemistry.
William MacLeod Raine, B.A., Lecturer in Journalism.
Fordyce P. Cleaves, M.A., Instructor in Oratory.
William R. Brackett, B.A., Instructor in Physics.
Elva Cooper, M.A., Instructor in Mathematics.
William V. Casey, Instructor in Education.
S. Griswold Morley, Ph.D., Instructor in Romance Languages.
Charles F. Poe, M.A., Instructor in Chemistry.
Paul M. Dean, M.A., Instructor in Chemistry.
Ethel R. Ford, B.A., Instructor in English.
Max M. Ellis, Ph.D., Instructor in Biology.
Arthur G. Vestal, B.A., Instructor in Biology.
Samuel S. Kingsbury, Ph.D., Instructor in Education.
J. Warren Stehman, M.A., Instructor in Commerce.
Donald McFayden, M.A., B.D., Instructor in Greek and in History.
William E. Dittman, C.P.A., Instructor in Accounting.
Lorena Underhill, M.A., Instructor in Philosophy.
Philip G. Worcester, M.A., Instructor in Geology.
Victoria H. Hazlitt, B.A., Instructor in Education.
Ruth M. Shelledy, M.A., Instructor in German.
William Bethke, M.A., Instructor in Economics.
George N. Rohwer, B.A., Instructor in Chemistry.
Leonard P. Fox, M.A., Instructor in History.
John H. V. Finney, B.S. (E.E.), Instructor in Physics.
Jessie Hutsinpillar, M.A., Instructor in English.
Marie Sorenson, M.A., Instructor in English.
John Gutknecht, B.A., Instructor in English.
William F. Baur, B.Ph., Instructor in German.
Louie Croft Boyd, R.N., Instructor in Principles of Nursing.
Homer S. McMillin, B.A., Instructor in Education.
B. Howard Jackson, M.E., M.A., Instructor in Chemistry.
Willard C. McNaul, M.A., Instructor in Economics (*ad interim*).

---

*On leave of absence, 1912-1913.

Maud Craig, B.A., Assistant in Latin and in Greek.
Georgia L. Field, M.A., Assistant in English Literature.
Carl E. Salomon, M.A., Assistant in English Literature.
Claribel Kendall, B.A., Assistant in Mathematics.
Ida M. Johnson, B.A., Assistant in Romance Languages.
Esbon Y. Titus, Assistant in Chemistry.
Eloie C. Dyer, B.A., Assistant in History.
Cornelius J. Marvin, Assistant in Physics.
Norma E. LeVeque, Assistant in Education.
Estelle M. Kyle, Assistant in Education.
S. Elizabeth Loyd, Assistant in English.
Helen Hunter, B.A., Assistant in English.
Caroline L. Habermann, B.A., Assistant in German.
Edna M. Reynolds, B.A., Assistant in Psychology.
Rose Ganson, Assistant in Psychology.
Obie Sue Pulliam, Assistant in Psychology.
James W. Bell, B.A., Assistant in Economics.

EQUIPMENT

LABORATORIES

The Physical Laboratory—The Department of Physics occupies the entire first floor, two hundred feet by sixty feet, of the Hale Science Building, with a large modern lecture room on the second floor. The laboratories are large and well supplied with gas, water, direct and alternating current, and the ordinary apparatus for students' use. There are rooms for advanced and research work equipped with special apparatus particularly in light and electricity. A well equipped shop and a department library also add greatly to the efficiency of the department.

Chemical Laboratory—The basement of the Chemistry Building contains a laboratory for organic and physiological chemistry, a laboratory for food analysis, a laboratory for sanitary water analysis, and the main stock and acid room. On the first floor are the laboratories for general chemistry and for qualitative analysis, a private laboratory, a laboratory for quantitative analysis, a balance room, a combustion room, and the stock distributing room. The second floor contains the main lecture room with an amphitheatre seating two hundred and fifty people, the lecture desk is supplied with water, gas, suction pumps, draught, and electric current; on this floor also are a room for the storage of lecture apparatus, a smaller lecture room seating eighty students, the chemical library, the professor's study and private laboratory, a laboratory for technical and gas analysis, and a laboratory for physical and electrochemistry. Each desk in the various laboratories is equipped with gas, water, and sink, and, in the organic laboratory, with suction pumps. The ventilation is accomplished by the direct-indirect system, assisted by the hoods and three horse-power electric motors and rotary fans. The laboratories for physical and advanced analytical chemistry are fitted up with the proper apparatus for thorough experimental work in these subjects. The chemical library, to which students in the laboratories have access at any time, is considered one of the best in the West.

Biological Laboratory—The Biological Laboratory occupies the third floor of the Hale Science Building. There are a large gen-

eral laboratory, a special laboratory for advanced work, a stock room, a preparation room, herbarium, a lecture room, and two private rooms for the professors. The laboratory is provided with microscopes, microtomes, water baths, glassware, reagents, etc. A small series of zoological models of the latest pattern and a limited number of models for teaching physiology are provided. There is some apparatus for work in plant and animal physiology. Instruments for field work in ecology are provided. There are two thermographs, a psychrograph, and sets of thermometers, geotomes, photometers, etc. An electric arc lantern is used for projections. The collection of lantern slides is a large one and especially adapted for teaching the botany and zoology of the Rocky Mountain region.

The University maintains at Tolland, Colorado (altitude 8,889 feet), a mountain laboratory for summer work in plant and animal ecology and taxonomy. Students expecting to teach botany and zoology in high schools are here given practical experience in the study of living things in their natural surroundings. The laboratory is well equipped for research work.

Geological and Mineralogical Laboratories—The west wing of the new fire-proof science building now houses the departments of Geology and Mineralogy.

The lower floor contains an assay laboratory, a furnace room with two three-muffle coal furnaces, a balance and a stock room, a room for storing and trimming rough material, a private office and laboratory, a paleontological laboratory and a lecture and recitation room.

On the second floor are the library and reading room, a drafting room, offices and private laboratories, an apparatus room and a large lecture room fitted with oak cases for the working collections, lantern, geologic maps, structural models, etc.

The top floor is designed for mineralogy and petrology and contains a petrology lecture and microscope room, an instrument room, a specimen room, private office and laboratories, a stock room, spectroscope room, quantitative mineralogy laboratory, balance room, and a determinative mineralogy laboratory. The determinative mineralogy laboratory provides desk room, complete blowpipe equipment and determinative apparatus for twenty-six students.

In order to better meet the increasing demand for instruction in geography and physiography, the department has recently added the following apparatus: An eighteen-inch Johnston Suspension

Globe, a Jones model of the earth, a high altitude barograph, an anemometer with continuous self-recording register, a Goode sunboard, an Andrews lunar tellurian, and Keeler's teachers' model. These instruments and this apparatus, together with the former equipment, which includes a hygrometer, a sling psychrometer, a thermograph, a photometer, and maximum and minimum thermometers, furnish suitable apparatus for elementary and advanced laboratory work in meteorology and geography.

Research Laboratories—Three private laboratories, each designed to accommodate two or three students, and a research laboratory are now available for advanced students of the Department of Geology.

By the addition of large oak cases which hold 15,560 specimens the Geology Department will now increase its working collections of minerals and rock specimens by approximately thirty-three per cent.

Four petrographical microscopes of the most approved type are available for optical mineralogy and petrography. A reflection goniometer and a machine for cutting sections of rocks and minerals have been added to the laboratory equipment of the Department. Equipment for advanced field work and geologic mapping includes traverse plane tables, Brunton pocket transits, aneroid barometers, Locke and Abney levels, steel tapes, a Stewart telemeter, drawing tables, pantagraph and planimeter. The library of the Department contains 2,500 volumes. It receives all United States and State Geological Survey reports and several important journals and magazines, as well as recent text and reference books on geology.

The Psychological Laboratory—The Psychological Laboratory occupies two rooms on the third floor of the Main Building. It is well equipped for instruction and training in physiological and experimental psychology. The equipment includes the apparatus necessary for general training courses in psychology and psychological methods, chronographs and recording appliances of various kinds, microscopic and lantern slides of brain sections, models, charts, a complete set of anthropometric instruments, etc. Instruments are provided for typical experiments in psychophysics, sensation, perception, association, reaction, and movement. Constant additions are being made to the equipment.

MUSEUM AND CABINETS

THE ZOOLOGICAL COLLECTIONS include vertebrate skeletons and skulls, mounted mammals and study skins, mounted birds and study skins, eggs and nests, fishes, reptiles, amphibians, crustaceans, insects, and mollusks. Especially important is the large collection of land, fresh-water, and marine shells, particularly rich in Colorado and Pacific Coast material, fresh-water fishes from various parts of the world, including a large series from Colorado, and a good series of western reptiles and amphibians.

THE BOTANICAL COLLECTION consists of a large series of mounted specimens, including seed plants, lichens, fungi and algæ, a display case of tropical seeds and fruits, a representative series of tropical woods and a collection of economic woods of the United States.

THE GUGGENHEIM BIOLOGICAL COLLECTION, purchased with funds placed at the disposal of the Board of Regents by Honorable Simon Guggenheim, United States Senator from Colorado, consists of a fine series of the nests and eggs of birds taken by Mr. Denis Gale at various altitudes in Colorado, with the accompanying field notes; also of a valuable collection of mounted birds and mammals, chiefly from Colorado and adjacent states.

THE MINERALOGICAL AND GEOLOGICAL COLLECTION consists of a large series of typical rocks, minerals, Colorado ores, microscopic sections of rocks, ores and minerals, wooden models of crystals, etc. They include both display and study specimens.

THE GUGGENHEIM MINERAL COLLECTION, the gift of Honorable Simon Guggenheim, consists of over 1,000 carefully selected type mineral specimens, which will be kept together for reference. It includes a large number of rare minerals not common in university cabinets, and is an extremely valuable addition to the equipment of the Department of Geology.

ETHNOLOGICAL COLLECTIONS—By co-operation with the School of American Ethnology the University has secured some specimens to illustrate the ancient cultures of the Southwest. This collection is being added to each year. At present there are four cases of display material.

THE PHOTOGRAPH AND LANTERN SLIDE CABINETS of the Biology and Geology departments and Museum contain several thousand negatives, prints and lantern slides illustrating various biological and geological phenomena.

THE PALEONTOLOGICAL COLLECTIONS contain great quantities of Colorado marine invertebrates, very large numbers of Tertiary insects and plants from the Lake Beds of Florissant, Colorado, Cretaceous plants from various parts of the state and from Kansas, Paleozoic plants from the coal measures of the eastern states, several thousand Tertiary and Pleistocene marine invertebrates from the Atlantic and Pacific coasts, a representative collection of Paleozoic invertebrates from the eastern states and Mississippi Valley, many invertebrate fossils from Europe and Mexico, and a few important fossil vertebrates, mostly from Colorado.

THE MUSEUM is temporarily located in the Hale Science Building, and contains the paleontological, biological and ethnological cabinets and part of the mineralogical collections. A large portion of the material hereinbefore described is considered a part of the Museum, though some of the most valuable study collections belong to the Biology and Geology departments, and all of the material in the Museum is intended for the use of the various teaching departments, of the general public and of specialists working upon lines represented in the collections. About forty display cases contain suitable material on exhibition, the balance being in drawer cabinets, where it may be examined by students and others interested. Large quantities of duplicates are being collected for class use, research, and exchange purposes. The Museum is at present the depository of the collections of the Colorado Geological Survey. Several loan collections are also in the cabinets.

For a number of years the Curator of the Museum, with members of the faculty and volunteer assistants, has been making short trips to various parts of the state for the purpose of collecting specimens and studying the natural phenomena of Colorado, and the material and notes thus obtained have formed the basis, wholly or in part, of many publications upon natural history subjects, which have appeared in *The University of Colorado Studies* and other periodicals. Early in 1909 arrangements were made for the Curator to devote his whole time to building up the Museum.

Among the more notable additions to the collections during 1912 were the following: Many small but important collections of fossils and recent shells obtained by the Curator, members of the biology faculty and various volunteer assistants in Colorado; a very fine collection of fishes, reptiles, and amphibians from Colorado collected by Dr. Max M. Ellis and various other members of the faculty;

a fine series of Colorado butterflies collected by Miss Eva Miller, and mounted for display; a large series of pearly mussels collected by Dr. Max M. Ellis in Indiana; many miscellaneous specimens collected by various members of the faculty; several important collections of fossils and recent mollusks from various parts of the world obtained by exchange; a collection of Philippine hats and baskets donated by George L. Cannon; besides smaller but much appreciated donations by friends of the University, among whom may be mentioned: Ellsworth Bethel, N. DeWitt Betts, John J. Blanchard, Roland Burnham, Roy M. Butters, George L. Cannon, Professor Theodore D. A. Cockerell, R. T. Copeland, Albert Dakan, J. Clarence DeVoss, Dr. Gideon S. Dodds, Terry Duce, Dr. Max M. Ellis, Mrs. Max M. Ellis, Harl S. Kittle, Harvey C. Markman, Dr. H. P. Mera, Dr. S. Griswold Morley, Howard Patton, George N. Rohwer, William P. Stein, A. H. Stockder, Miss Cipriana Subejano, Arthur G. Vestal, and E. R. Warren. The Curator has turned into the Museum all of his private collection of fossils and recent mollusks, which is the accumulation of the work of many years. Reports upon the fishes, reptiles and amphibians of Colorado are in preparation and will soon be published, based primarily upon the collections in the Museum, to which have been added all previously published records, and records of the material in the several museums of Denver, Greeley and Fort Collins, by permission of the authorities of those institutions.

ART COLLECTIONS

The Phillips Art Collection is named from the donors, Mr. and Mrs. Ivers Phillips, of Boulder. It is contained in a room on the second floor of the east wing of the Macky Auditorium. The masters of painting are represented by Braun autotypes, framed in oak under glass; some are of the largest size ever produced, and all are inalterable in carbon. The works in architecture and sculpture are represented by large photographic reproductions, casts and several hundred glass transparencies. The finest casts are Henning's restoration of the entire Parthenon frieze with that sculptor's designs for the missing slabs; the Portland vase in color; the vase of Sosibius; heads from Trajan's column; bas-reliefs by Donatello, Michelangelo, Flaxman and Wyon; madonnas by Lucca della Robbia and Michelangelo; heads of Sappho, Juno, Jupiter, Minerva, Eros, Niobe, and the Hermes of Praxiteles; full size statues of Narcissus, Hermes, Apollo Belvidere, Diana of Versailles, Venus de Medici, etc.

Persons willing to contribute to a museum or library of fine arts are requested to confer with the curator, Professor J. Raymond Brackett.

Lectures covering the main subjects illustrated in the collection will be given in the Department of Comparative and English Literature; see also courses in Greek and Roman Archæology.

The Farnsworth Collection of Coins was given to the University by Dr. Wilson A. Farnsworth, of Cæsarea, Cappadocia. It consists of some three hundred and fifty Greek, Roman, Byzantine, mediæval, and modern coins. The Greek coins illustrate autonomous, regal and imperial series, and are of silver and bronze; among them are rare coins from Egypt, Syria, Asia Minor, Macedonia and Greece. The Roman coins illustrate family and imperial series of silver and bronze. The collection is on exhibition in the rooms of the Greek Department.

Greek Photographs—The Department of Greek has added to its equipment a collection, almost complete, of photographs of sculptures in the Museum at Athens, as well as excellent photographs of representative statuary in the principal museums of Europe. The department has also a collection of more than two hundred photographs illustrating the scenery of Greece. From most of these, lantern slides have been made.

COURSES OF STUDY

INTRODUCTORY

In connection with the new requirements for graduation the following general tendencies may be noted. An attempt has been made to map out, instead of the old elective plan, an intelligent and reasonable group system, which shall leave adequate freedom for individual needs and abilities, and, at the same time, prevent undesirable scattering of the student's energies. Provision is made for a combination of certain fundamental subjects and free electives with special work that shall be more scholarly and more finally valuable both for cultural attainments and scientific efficiency. In accordance with the latter idea students are required to take a large part of their group electives in their junior and senior years, when it is possible to do real University work leading to the attainment of considerable knowledge and real power in some special line.

Moreover, the plan adapts itself readily to the needs of students who are looking forward to further work in professional and technical schools. Thus, within the College of Liberal Arts itself provision is made for a College of Commerce with various subdivisions and for a College of Education. By combining work in the College of Liberal Arts with work in the technical schools the student may attain the degree of B.A., and either the degree of B.S. in the College of Engineering, or the degree of LL.B. in the School of Law, in six years, or the degree of M.D. in the School of Medicine, in seven years. In summary, then, we have a group system so arranged that the first two years in the College of Liberal Arts provide alike a foundation for more advanced work along University lines and a sound preparation for courses in technical and professional schools. This latter phase of the plan is in accordance with the growing conviction that the college course must do its part in the genuine preparation of students for a vocation, as well as offer every opportunity for the acquiring of a liberal education in the most enlightened sense of the word.

For the purposes of the present group system the various subjects are arranged as follows:

I. Division of Letters: 6 groups.
II. Division of Sciences: 7 groups.
III. Division of Philosophy. 3 groups.

IV. Division of History and Economics: 3 groups.

With the same general purpose in view, but carried out in logical detail, the College of Commerce and the College of Education have been established.

V. Division of Commerce, organized as the College of Commerce: 4 groups as follows: 1. Banking; 2. Manufacturing; 3. Journalism; 4. Trade, Transportation, Consular Service.

VI. Division of Education, organized as the College of Education; a professional group, and groups corresponding to those of the College of Liberal Arts.

Here may also be noted the arrangement for obtaining two degrees in six years by crediting courses in the professional schools as a substitute for the groups and electives of the last two years—an extension of the group system. See pages 63, 111.

VII. Engineering Subjects: equivalent of two years.

VIII. Law Subjects: equivalent of one year.

IX. Medical Subjects: equivalent of one year.

REQUIREMENTS FOR ADMISSION

See page 41.

REQUIREMENTS FOR GRADUATION

To attain the degree of Bachelor of Arts students must complete one hundred and twenty hours according to the schedule printed below.

Attention is called to the following points:

1. Students must take fifty hours in some scheduled group, including at least five hours in each minor, the adjustment of the remaining hours to be advised by the major professor. Of the fifty hours, they shall take at least thirty in the junior and senior years.

2. They may be allowed to substitute four hours of elective courses for the required composition of the sophomore year on recommendation of the head of the Department of English Language, if they attain a satisfactory grade in English composition of the freshman year.

3. Students taking ten hours of either classics, mathematics, or science in the freshman year, shall choose five hours in one of

the other groups named, in the sophomore year, unless they have included such five hours in their freshman year.

4. In beginning language courses no credit is given for less than a full year's work.

NOTE—The various branches taught in the College of Liberal Arts are offered in courses of study. A *five-hour course*, as here used, means *five* exercises a week throughout a semester; a course in which the class meets the instructor *once* a week is a *one-hour course*. Three *five-hour courses* successfully pursued for one semester would entitle the student to *fifteen* hours' credit; for one year, to *thirty* hours' credit; and so on.

Freshmen students regularly take fifteen or sixteen hours per week, other classmen fifteen to seventeen.

On a day appointed before the close of each semester all students are required to record their election of studies for the next semester. Credit will be granted for such studies only as have been approved by the Committee on Courses. No student will be permitted to change his course, or drop any study, except by vote of the Committee on Courses.

SCHEDULE

FRESHMAN YEAR

1.	ENGLISH LANGUAGE	6 hours
*2.	CLASSICS, MATHEMATICS OR SCIENCE	10 hours
3.	HISTORY OR ECONOMICS	6 hours
4.	FREE ELECTIVES (8 or 10 hours)	8 hours
		30 hours

SOPHOMORE YEAR

5.	ENGLISH LANGUAGE OR LITERATURE	4 hours
*6.	CLASSICS, MATHEMATICS OR SCIENCE	5 hours
7.	PSYCHOLOGY OR PHILOSOPHY	5 hours
8.	GROUP ELECTIVES (Major or Minor)	10 hours
9.	FREE ELECTIVES (6 or 8 hours)	6 hours
		30 hours

*To be in different groups, e. g., if ten hours of classics are elected in the freshman year, then five hours of mathematics or science must be elected in the sophomore year, unless already included in the freshman year.

JUNIOR YEAR

10. GROUP ELECTIVES (Major or Minor).....20-15 hours
11. FREE ELECTIVES .....10-15 hours

30 hours

SENIOR YEAR

12. GROUP ELECTIVES (Major or Minor).....20-15 hours
13. FREE ELECTIVES .....10-15 hours

30 hours

GROUPS

DIVISION OF LETTERS

GROUP (a) *Major*, Latin; *Minors*, { Greek, European History.

GROUP (b) *Major*, Greek; *Minors*, { Latin, English Literature or Philosophy.

GROUP (c) *Major*, German; *Minors*, { History, Latin or French.

GROUP (d) *Major*, { Romance Languages; *Minors*, { Latin, German.

GROUP (e) *Major*, { Comparative and English Literature; *Minors*, { History, English Language.

GROUP (f) *Major*, { English Language; *Minors*, { English Literature, English History.

II. DIVISION OF SCIENCES

GROUP (g) *Major*, Mathematics; *Minors*, { Physics, Astronomy.

GROUP (h) *Major*, Chemistry; *Minors*, { Physics, Mathematics.

GROUP (i) *Major*, Physics; *Minors*, { Mathematics, Chemistry.

GROUP (j) *Major*, Botany; *Minors*, { Zoology, Chemistry.

GROUP (k) *Major*, Zoology; *Minors*, { Botany, Chemistry.

GROUP (l) *Major*, Geology; *Minors*, { Chemistry, Mineralogy.

GROUP (m) *Major*, Mineralogy; *Minors*, { Geology, Chemistry.

III. DIVISION OF PHILOSOPHY

GROUP (n) *Major*, Philosophy; *Minors*, { Psychology, Biology.

GROUP (o) *Major*, Psychology; *Minors*, { Philosophy, Biology.

GROUP (p) *Major*, Education; *Minors*, { Psychology, Biology.

IV. DIVISION OF HISTORY AND ECONOMICS

GROUP (q) *Major*, History; *Minors*, { Economics, Sociology.

GROUP (r) *Major*, Economics; *Minors*, { History, Sociology.

GROUP (s) *Major*, Sociology; *Minors*, { Biology, Psychology.

ORDER OF DESCRIPTION OF COURSES

The various courses offered in the College of Liberal Arts are described in the following order:

Greek.
Latin.
Hebrew.
Germanic Languages and Literatures.
Romance Languages — French, Spanish, Italian.
Comparative and English Literature.
English Language.
Oratory and Expressive Reading.
Library Science.
Mathematics.
Physics.
Chemistry.
Biology.
Geology and Mineralogy.
Philosophy, Logic and Ethics.
Psychology.
Education.
History.
Economics, Sociology.
Music.
Electives in the Professional Schools.

*DESCRIPTION OF COURSES

GREEK

†1-2. Elementary Course. Throughout the year. 11:30. 5 h. Goodwin's Grammar and Xenophon's Anabasis.

†3. Homer's Odyssey. First semester. 9:00. 3 h. Careful study of selected books.

†4. Lysias' Orations and Review of Greek Grammar. First semester. 9:00. 2 h. For freshmen.

5. History of Athens. First semester. 9:00. 3 h. Open to all. Lectures with assigned readings on the constitutional, political, and literary history of the Ancient City. No reading of Greek required.

6. Plato. Second semester. 9:00. 3 h. For freshmen. The Apology and Crito with selections from the Phædo.

7. Tragedy. Second semester. 9:00. 2 h. For freshmen. Sophocles' Antigone or Euripides' Medea with introductory lectures on the Greek Drama.

8. Plato. First semester. 11:30. 3 h. Rapid reading of selections.

9. Aristophanes. First semester. 11:30. 2 h. Selected comedies.

10. Demosthenes. First semester. 10:00. 3 h. Oration on the crown.

11. Pastoral Poetry. First semester. 10:00. 2 h. Theocritus, Bion, and Moschus.

12. Plato. Second semester. 10:00. 3 h. Interpretation of the Republic with lectures on Platonism.

13. Thucydides. Second semester. 10:00. 2 h. Selected books.

14. Lyric Poetry. First semester. 10:00. 3 h. Early Lyric Poets, with introduction to Pindar and Bacchylides.

---

*Courses for Graduates only are listed and described under Graduate School.

†Courses 1-2 are offered for students who come to the University without preparation in Greek. Upon the completion of these courses they are prepared to enter courses 3 and 4. Courses 3 and 4 are also for freshmen who enter the University with at least two units of Greek.

15. Tragedy. First semester. 10:00. 2 h.
Advanced course; Æschylus and Euripides.

16. Prose Composition. Second semester. 11:30. 2 h.

17. Aristotle's Poetics. Second semester. 2:30. 1 h.

18. History of Greek Literature. First semester. 3:30. 3 h.
Lectures with reading of best English translations of Greek authors.

19. History of Greek Literature. Second semester. 3:30. 2 h.
Continuation of Course 18.

20. History of Greek Art. First semester. 2:30. 2 h.

21. Classical Mythology. Second semester. 3:30. 2 h.
Lectures and readings; interpretation of myths.

For courses for graduates only, see page 139.

LATIN

1. Cicero. First semester. 11:30. 3 h.
Cicero, De Senectute, De Amicitia; the relation of these works to Cicero's other writings; Latin grammar, prose composition.

2. Ovid. First semester. 11:30. 2 h.
Selections from Ovid; the influence of Ovid on modern literature; introduction to classical mythology.

3. Livy. Second semester. 11:30. 3 h.
Selections from the earlier books; Latin prose composition.

4. Terence and Plautus. Second semester. 11:30. 2 h.
One play of each author; the place of Terence and Plautus in literature; introduction to Roman comedy.

5. Horace. First semester. 8:00. 3 h.
The Odes and Epodes; introduction to Latin lyrical poetry; Latin versification.

6. Latin Prose. First semester. 8:00. 2 h.

7. Tacitus. Second semester. 8:00. 2 h.
Tacitus, Agricola and Germania; the spread of Roman influence in the West.

8. Latin Prose and Sight Translation. Second semester. 8:00
3 h.

9. Latin Literature. Throughout the year. 2:30. 3 h.
The outlines of the literature with its historical setting. The course is based on Latin selections.

10. Roman History. First semester. 10:00. 3 h.
Lectures and reports on sources.
Outlines of Roman History; the history of Rome from its foundation to 476 A. D.

11. Roman Satire. First semester. 8:00. 3 h.
Horace, Juvenal, Persius; the origin and development of satire with a critical estimate of the historical value of the contents.

12. Tacitus and Pliny. First semester. 8:00. 2 h.
Tacitus, Histories, book I; Pliny, Letters, book X; introduction to the prose of the Silver Latinity; Rome and the provinces.

13. Roman Comedy. First semester. 1:30. 3 h.
Terence and Plautus, six plays; a comparative study of these authors from the literary as well as the morphological side.

14. Rhetorical Treatises. 5 h.
Horace, Ars Poetica; Cicero, De Oratore, Brutus; Quintilian, Book X; Tacitus, Dialogus de Oratoribus; principles of literary criticism; the debt of the above writers to Greek sources.

15. Catullus. First semester. 11:30. 2 h.
Latin lyrical poetry.

16. Roman Philosophy. 5 h.
Lucretius, De Rerum Natura; Cicero, De Natura Deorum, De Finibus and Tusculanæ; Seneca, selections; the place of Roman philosophy in the history of philosophy; the part played by these writers individually.

17. Roman History. 63 B. C. to 37 A. D. 3 h.
Sallust's Catiline; Cicero's Letters (Abbot's selections); Tacitus, Annals, books I-VI; Velleius Paterculus, book II.

18. Tibullus and Propertius. 2 h.
Selected odes; special studies in Latin lyrical poetry.

19. Martial and Pliny. 2 h.
Selected epigrams and letters; private life under the early Roman Empire.

20. Latin Literature in English. 3 h.
The course is based on standard translations and is intended for students not taking Latin.

21. Livy. 2 h. For advanced students.
Book I as a basis for the consideration of the problems of early Roman history.

22. Suetonius. 2 h.
Selected lives; introduction to the history of the Empire.

23. Teachers' Training Course. Second semester. 3 h. For advanced students.
Lectures, reviews of text-books; practical work in teaching under supervision.

24. Advanced Latin Prose. 2 h.
Stylistic analysis of Latin authors; the writing of Latin prose; problems in syntax.

25. Greek and Roman Archæology. 2 h.
An elementary course in architecture, sculpture, and painting.

For courses for graduates only, see page 139.

*HEBREW

1. Beginners' Course. First semester. 1:30. 3 h. 1910.
Introductory lectures on Semitic life and literature; study of Genesis, Chapters, 1-8.
Harper's Method and Manual with Elements of Hebrew.

2. Course I Continued. Second semester. 8:00. 3 h.

3. Second-Year Course. First semester. 1:30. 3 h. 1911.
Introductory lectures on Semitic religions; review of grammar and syntax; translations in Old Testament histories.
Kittells' Text; Tregelles, Gesenius or Brown-Driver-Briggs Lexicon.

4. Course 2 Continued. Second semester. 1:30. 3 h.
Translations in Psalms, Wisdom Literature, Minor Prophets.

GERMANIC LANGUAGES

1-2. Elementary Course. Throughout the year. 8:00, 11:30, 1:30. 5 h.
Grammar, pronunciation, reading; practice in writing and speaking German.

*It is the object of this Department to give the student, in a two-year course, a good working knowledge of the Hebrew language and literature. It is designed especially to meet the wants of theological students, students preparing for missionary work, and those desiring to add this as a linguistic accomplishment.

3-4. Intermediate Course. Throughout the year. M. W. F. 8:00 and 11:30. 3 h.

Reading of selected masterpieces of German literature, such as Lessing's Minna von Barnhelm, Schiller's Jungfrau von Orleans, Ludwig's Zwischen Himmel und Erde, Freytag's Die Journalisten.

It is strongly recommended that Course 3-4a accompany Course 3-4.

Prerequisite: Course 1-2, or two years of high-school German.

3-4a. Composition and Colloquial Practice. Throughout the year. Tu. Th. 8:00, 9:00, 11:30.

German themes and letters; drill in syntax and idiom.

It is recommended that Course 3-4a be taken parallel with Course 3-4.

Prerequisite: Course 1-2, or two years of high-school German.

5. Lessing as a Dramatist. First semester. 3 h.

Study of Nathan der Weise and Emilia Galotti; readings from Lessing's other works; discussions and papers.

Prerequisite: courses 3-4 and 3-4a.

6. Schiller's Wallenstein and Die Braut von Messina. Second semester. 3 h.

Readings from the other plays of Schiller; discussions and papers.

Prerequisite: Course 5.

7. Goethe's Dramas, Exclusive of Faust. One semester. 3 h.

Readings, discussions, papers.

Prerequisite: Course 5 or 6.

8. The German Drama of the Nineteenth Century. First semester. 3 h. Open to advanced students who read German with facility.

Reading of representative plays and discussion of the problems which they present.

9. Advanced Composition. One semester. 2 h. Open to advanced students on consultation; recommended to prospective teachers of German.

Themes on various aspects of German life, with discussions in the German language.

10. German Pronunciation. One semester. 1 h.
Special drill on the German sounds; the reading of selected German poems.
Prerequisite: courses 1-4.

11. Goethe's Faust; Parts I and II. Second semester. 3 h. Open to graduate students and seniors.

12. Studies in the History of the German Novel. One semester. 3 h. Open to seniors and juniors who read German with facility.
Reading and discussion of selected works.

13. The German Novelle. One semester. 3 h. Open to seniors and juniors who read German with facility.
Reading and discussion of representative stories.
This course alternates with Course 12.

14. Teachers' Course. Throughout the year. 2 h.
The phonetics and pronunciation of German; methods of teaching German to foreigners; examination of grammars and readers; systematic study of one of the texts usually read in high schools.

15. Scientific German. Throughout the year. 2 h.
Prerequisite: Course 1-2, or two years of high-school German.

For courses for graduates only, see page 141.

ROMANCE LANGUAGES

FRENCH.

1. Beginners' Course. First semester. 10:00, 11:30, and 1:30. 5 h.
A course in grammar, pronunciation, and sight reading for students who present German for admission to college.
Aldrich and Foster's Elementary French; Aldrich and Foster's French Reader; Matzke's Primer of French Pronunciation.

2. Course 1 Continued. Second semester. 10:00, 11:30 and 1:30. 5 h.
Reading of modern French prose; phonetic drill; committing to memory of selected passages; prose composition.

3. Second-Year Course. First semester. 9:00. 5 h.
Modern French stories and plays to be selected from the works of Balzac, Daudet, Dumas, Feuillet, Pailleron, Maupaussant; selected lyrics; prose composition; daily themes.

4. Second-Year Course Continued. Second semester. 9:00. 5 h.
Prose writings of the Nineteenth Century; completion and review of French grammar; selected lyrics; prose composition twice a week.

5. Third-Year Course. First semester. 10:00. 3 h.
Systematic reading of authors or by topics to be selected from the following and given in the third and fourth years: Moliere, Victor Hugo, modern drama, classic tragedy, Romantic School, lyric poetry. 1912-1913, Eighteenth Century literature; Francois's Advanced Prose Composition.

6. Third-Year Course. Second semester. 10:00. 3 h.
1912-1913, Eighteenth Century literature continued; Francois's Advanced Prose Composition.
See Course 5.

7. History of French Literature. First semester. 10:00. 2 h.
Lectures and reports.
From the beginnings to the reign of Francis I.

8. History of French Literature. Second semester. 10:00. 2 h.
Lectures and reports.
From the reign of Francis I. to the present time.

For courses for graduates only, see page 142.

SPANISH.

1. Beginners' Course. First semester. 11:30. 3 h.
Grammar, pronunciation, sight reading.
Olmsted and Gordon's Spanish Grammar.

2. Course 1 Continued. Second semester. 11:30. 3 h.
Hill's Spanish Tales for Beginners; practical exercises in composition and conversation based on Butler's Spanish Teacher.

3. Second-Year Course. First semester. 9:00. 2 h.
Reading of standard authors; completion and review of Spanish grammar; El Capitan Veneno.

4. Second-Year Course. Second semester. 9:00. 2 h.
Spanish drama, prose and poetry; prose compositions; two plays of Echegaray, Valera's Pepita Jimenez.

5. Spanish Literature of the Nineteenth Century. First semester. 2 h.
6. Lope de Vega and Calderon. Second semester. 2 h.
7. Advanced Prose Composition. Second semester. 1 h.

For courses for graduates only, see page 142.

ITALIAN.

1. Beginners' Course. First semester. 2:30. 3 h.
   Grandgent's Italian Grammar; Marinoni's Italian Reader; grammar, pronunciation, sight reading.
2. Course 1 Continued. Second semester. 2:30. 3 h.
   Advanced composition; modern Italian novels and plays; De Amicis, La vita militare, three comedies of Goldoni.
3. Dante's Divine Comedy. First semester. 2 h.
4. Petrarch and Bocaccio. Second semester. 2 h.

For courses for graduates only, see page 142.

Notice—Students are recommended to take up the Romance Languages in the following order: French, Spanish, Italian. They should not elect courses simultaneously in Spanish and Italian without consulting the instructor.

COMPARATIVE AND ENGLISH LITERATURE

1. Introduction to Narrative and Lyric Poetry. Throughout the year. 1 h. Open to freshmen.
2. Introduction to the Novel. Throughout the year. 1 h. Open to freshmen.
3. The Analysis of Play Construction. Throughout the year. 1 h. Open to freshmen who enter with high standing in English.
4. Art Form. Throughout the year. 1 h. Open to all.
   Lectures illustrated by lantern slides.
   The sources, effects, and methods of composition in poetry illustrated by reference to architecture, sculpture, and painting; the chief art works of every age.
5. The History of English Literature. Two or more divisions. Throughout the year. 5 h. Open to sophomores. Every year.

Recitations and lectures.

From Anglo-Saxon times to the Twentieth Century; the chief types of prose and poetry; the principles of literary analysis and criticism; wide reading in English authors. This is the foundation course for those electing literature as a major. An effort is made to secure good habits of reading and writing.

History of English Literature; Century Readings in English Literature.

6. SHAKESPEARE. Two divisions. Throughout the year. 5 h. Open to graduates and advanced undergraduates. Every year.

All the works attributed to Shakespeare are read during the year; studies in the style, diction, and versification of the different periods; the establishment of the text; interpretation of great dramatic types—history, comedy, tragedy; wide reading and some original research.

7. THE GREAT DRAMA. Throughout the year. 5 h. For graduates and advanced undergraduates. 1912.

The international aspects of the English drama; a reading course from the mystery plays to the Twentieth Century.

8. MILTON'S POETRY. 2 h. For advanced students. 1905.

9. WORDSWORTH. First semester. Tu. Th. 2 h.

10. SHELLEY. First semester. 1 h. 1912.

11. TENNYSON. Throughout the year. Tu. Th. For advanced students.

12. BROWNING. Second semester. 1 h. For advanced students. 1909.

The Globe edition of Tennyson; the Cambridge edition of Browning. The Seminary Library contains many volumes of valuable Tennysoniana presented by members of the class of 1896, and publications of the Browning Society.

Courses 11 and 12 require a preliminary training in literary method.

13. VICTORIAN PROSE. Throughout the year. 2 h. Open to seniors and juniors.

14. AMERICAN AUTHORS. Throughout the year. 2 h.

15. COMPARATIVE LITERATURE: EARLY LITERATURE AND ART. Throughout the year. 11:30. 3 h. Open to all. 1910.

The lectures deal with the poetry of primitive peoples, of China, of Japan; with the special contributions to the evolution of literature made by Egypt, Babylonia, Judea, Arabia, India, and Persia. The literature of each people is viewed in connection with other manifestations of the artistic impulse; the chief works in architecture, sculpture and painting.

16. THE EPIC. Throughout the year. 5 h. For graduates and undergraduates. 1911.

The Iliad, the Odyssey, and the Æneid; the Divine Comedy; the great epics of all ages (in English).

17. WORLD DRAMA. Throughout the year. 5 h. For graduates and advanced undergraduates. 1912.

The development of the drama from the earliest times to the present; primitive drama; the literary drama of China, Japan, and India; the ancient classical drama; Calderon; Corneille, Racine, Moliere, Victor Hugo; Lessing, Schiller, Goethe; Ibsen; Tolstoy; Echegaray; Rostand, Maeterlinck; D'Annunzio; Hauptmann, Sudermann. This is a reading course, including one hundred and twenty-seven plays (in English).

18. THE SHORT STORY.

19. MASTERPIECES OF PROSE FICTION FROM THE EARLIEST TIMES. Throughout the year. 5 h. Open to graduates and advanced undergraduates. 1912.

Typical masterpieces from the Greek romances to the present.

For courses for graduates only, see page 143.

ENGLISH LANGUAGE

1. FRESHMAN ENGLISH. Eleven sections. Throughout the year. M. W. F. 8:00, 9:00, 10:00, 11:30, 1:30. 3 h. Required of all college freshmen.

Text-book, daily themes, oral exercises.

2. ADVANCED COMPOSITION. Both semesters. Tu. Th. 10:00. 2 h. Narration and description.

3. ADVANCED COMPOSITION. Both semesters. Tu. Th. 2:30. 2 h. Exposition.

4. SHORT STORY. Second semester. Tu. 7:30. 2 h.

A course in writing short stories under criticism of the instructor and the class, to which only a limited number of apt students are admitted.

5. Argumentation and Debate. First semester. M. W. F. 2:30. 3 h.

At the end of the first semester the University debating squad is selected from the membership of this class. Those forming this squad will be given two additional credits. The course may be repeated, but no student shall receive more than a total of ten credits.

6. Journalism. Throughout the year. M. W. F. 10:00. 3 h. Not open to freshmen.

Lectures, reports, practical work.

7. History of the English Language. First semester. 11:30. 2 h.

Brief review of linguistics and of the relations of the Indo-European languages; history of English grammatical forms; sentence structure, and vocabulary.

8. Anglo-Saxon. First semester. M. W. F. 10:00. 3 h.

Bright's Anglo-Saxon Reader.

9. Anglo-Saxon. Second semester. M. W. F. 10:00. 3 h.

Beowulf.

10. Middle English. First semester. Tu. Th. 11:30. 2 h.

Supplementary reading, lectures, reports.

Emerson's Middle English Reader.

11. Chaucer. Second semester. Tu. Th. 11:30. 2 h. Not open to freshmen.

Lectures, readings, reports.

Skeat's Texts of Canterbury Tales.

12. Shakespeare. First semester. M. W. F. 11:30. 3 h. Not open to freshmen.

The careful reading of three plays in class and the study of other plays read out of class.

Rolfe's Texts and Dowden's Primer.

13. Shakespeare. Second semester. M. W. F. 11:30. 3 h.

See Course 12.

14. Pre-Shakespearean Drama. First semester. Tu. Th. 11:30. 2 h. Not open to freshmen.

Lectures, readings, reports.

Manly's Specimens of Pre-Shakespearean Drama.

15. Interpretation of English Poetry. Second semester. Tu. Th. 11:30. 2 h. Not open to freshmen.

Lectures, readings, reports.

Each year a different poet is studied; in 1913, Wordsworth.

16. Study of Prose Style. Second semester. Tu. Th. 10:00. 2 h.
Not open to freshmen.
Lectures, readings, reports.

ORATORY AND EXPRESSIVE READING

1. Public Speaking. First semester. W. or Th. 1:30. 1 h.
A course in the elements of public speaking, with weekly declamations and original orations.
Emerson's Perfective Laws of Art, Vols. I and II.

2. Course 1 Continued. Second semester. W. or Th. 1:30. 1 h.
Extemporaneous speaking; briefs and forensics.
Emerson's Perfective Laws of Art, Vols. III and IV.

3. Advanced Oratory. Throughout the year. Hours to be arranged.
Special work for honor men, class and private.

4. Dramatic Art. First semester. W. or Th. 3:30. 1 h.
Theses written and delivered before class; dramatic criticism.
Curry's Imagination and Dramatic Instinct.

5. Course 4 Continued. Second semester. W. or Th. 3:30. 1 h.
Readings and theses on dramatic subjects; dramatic criticism; Shakespeare.
Curry's Imagination and Dramatic Instinct.

6. Elocution and Theory of Expression. First semester. W. or Th. 2:30. 1 h.
Recitations and readings before class; drill in reading; thesis.
Emerson's Evolution of Expression, Vols. I and II.

7. Course 6 Continued. Second semester. W. or Th. 2:30. 1 h.
Emerson's Evolution of Expression, Vols. III and IV.

8. Voice Culture and Dramatic Action. Th. 8:00. 1 h.
Development of voice; voice criterions; personal appearance; physical culture for grace and responsiveness, based on classic models.

LIBRARY SCIENCE AND PRACTICE

1. Library Science and Practice. Throughout the year.
Th. 7:00 p. m., lectures; five hours each week, laboratory. 2 h.
Lectures by members of the library staff, and invited members of the profession.

The course aims to give an adequate working knowledge of library usage.

First semester. Routine: Preparation of books for shelves, classification, accessioning, cataloguing, binding, repairing, collating, charging systems, card catalogues and arrangement.

Second semester. Reference: indexes; encyclopedias; dictionaries; atlases; bibliographies; United States, state, and foreign documents; special libraries; administration.

Visits to neighboring libraries, binderies, and publishing houses, supplement lectures and laboratory instruction.

MATHEMATICS

1. Algebra and Trigonometry. First semester. 8:00, 9:00. 5 h.
2. Analytic Geometry. Second semester. 8:00. 5 h.
3. Mathematical Teaching. First semester. 8:00. 3 h.
4. History of Mathematics. Second semester. 8:00. 3 h.
5. College Algebra. First semester. 8:00, 9:00. 5 h.
6. Trigonometry. Second semester. 9:00. 5 h.
7. Analytic Geometry. First semester. 9:00. 5 h.
8. Algebra and Trigonometry. Second semester. 9:00. 5 h.
9. Differential Calculus. First semester. 9:00. 5 h.
10. Integral Calculus. Second semester. 9:00. 5 h.
11. Modern Geometry. Second semester. 10:00. 5 h.
12. Differential Calculus. Second semester. 10:00. 5 h.
13. Integral Calculus. First semester. 10:00. 5 h.
14. Differential Equations. First semester. 11:30. 5 h.
15. Solid Analytic Geometry. Second semester. 11:30. 5 h.
16. Elementary Solid Geometry. First semester. 11:30. 3 h.
17. Theory of Functions. Second semester. 11:30. 2 h.
18. Life Insurance. Second semester. 11:30. 2 h.
19. Modern Accounting. Second semester. 9:00. 2 h.
20. Elective Mathematics. Time and credit to be arranged.

The usual sequence for regular majors or minors is courses 1, 2, 9, 10, 14, 15, 17; total, 35 hours. Prospective teachers of mathematics should take courses 5, 6, 7, 11, 12, 13, 3, 4, 16, 19; total, 41 hours.

For the subjects which the students in the College of Liberal Arts may elect from the College of Engineering, and for the credits which will be allowed therefor, see page 111.

For courses for graduates only, see page 144.

PHYSICS

1-2. General Physics. Throughout the year. Tu. Th. 11:30, lectures, two hours; recitations, two hours. 4 h. each semester.

A general course extending throughout the year, covering the properties and the mechanics of solids, liquids and gases, and the phenomena of heat, electricity, magnetism, sound, and light.

This course is intended as an elementary but thorough presentation of the fundamental facts, principles, theories, methods, and applications of modern physics. It provides an almost indispensable basis for a complete understanding of nearly every branch of pure or applied science. The lectures are fully illustrated by apparatus and experiments, thus enabling the student to observe personally most of those phenomena which have played an important role in the development of physical theories. The recitations are based upon the lectures and a text-book which the student is expected to study systematically in parallel with the lectures.

Prerequisite: an elementary knowledge of plane trigonometry.

3-4. Experimental Physics. Throughout the year. One three-hour period per week. 1 h. each semester.

Elementary laboratory work in the subjects of mechanics, heat, sound, light, and electricity and magnetism. This course is designed to give the student, so far as possible, a first hand knowledge of the more important facts and laws of physics and to familiarize him to some extent with methods and instruments of precision.

Prerequisite: an elementary knowledge of plane trigonometry. It is strongly recommended that courses 3-4 be taken in parallel with courses 1-2. Courses 1-2 and 3-4 are taken regularly in the sophomore year but may be taken by anyone with the requisite preparation. They should be taken by those whose major subject is physics, mathematics, or chemistry.

5-6. The Principles of Physics. Throughout the year. 2 h. each semester.

Lectures with recitations based upon both the lectures and a text-book.

A non-mathematical course intended primarily for those whose

majors are in the humanities but who may desire a fairly thorough non-technical knowledge of one of the most fundamental and useful sciences. The subject is studied in rather broad outline, details being largely omitted. Emphasis is placed upon the acquirement of an understanding of those facts, principles, and applications which today should be a part of the common knowledge of all educated persons.

Those desiring to supplement this course by training in the laboratory may join one of the divisions of courses 3-4.

7. Theoretical Mechanics—Statics; Centers of Mass; Moments of Inertia. Second semester. M. F. 11:30. 2 h. Taken regularly in the second semester of the sophomore year.

A course of lectures and recitations based upon both the lectures and text-book, and involving a thorough study of the conditions of equilibrium of particles and rigid bodies; calculation of centers of mass and moments of inertia.

Prerequisite: Physics 1, differential and integral calculus; open, however, to those who are beginning integral calculus the second semester.

8. Theoretical Mechinics—Dynamics. First semester. M. W. F. 8:00. 3 h. Taken regularly in the first semester of the junior year.

Lectures, with recitations based upon the lectures and a text-book.

A study of the motion of particles and rigid bodies. Emphasis is laid upon the fundamental physical principles of the subject and upon the fact that the mathematical processes involved are simply an easy means of arriving at an understanding of a physical problem. An endeavor is also made to impart to the student a certain facility in translating physical conceptions into mathematical symbols and mathematical formulæ into concrete ideas.

Prerequisite: Physics 1, differential and integral calculus.

9. Theory of Electricity and Magnetism. First semester. M. W. Th. F. 10:00. 4 h.

Lectures and recitations.

An elementary presentation of the mathematical theory of electricity and magnetism and the theory of electrical instruments. Among the subjects treated are the following: a brief discussion of the theory of errors, with special application to

measurements made in the electrical laboratory; the general principles of electro-statics, including Gauss' Theorem and its applications; condensers and dielectrics; magnetism and the properties of magnets; laws of the electric current; energy of the electric current; magnetic and electro-magnetic induction; magnetic effects of electric currents; mechanical force due to electric currents; thermoelectric currents; the general theory of several instruments of fundamental importance in electrical measurements; electric and magnetic units.

Prerequisite: Physics 1-2, or equivalent, and differential and integral calculus.

10. Electrical Measurements. First semester. 6 h. to count as 2 h. Taken regularly in the junior year.

A laboratory course intended to accompany and to supplement Course 9.

Students specializing in physics or chemistry may arrange for extra work for further credit.

11. Theory of Electricity; Alternating Currents. Second semester. 2 or 3 h.

The course begins by emphasizing and elaborating the most important topics of Course 9. Some omitted topics are also taken up, after which the course proceeds to the consideration of alternating current theory and problems. Courses 9 and 11 are designed to furnish a thorough knowledge of fundamental facts and principles and a preparation for the further study of the most advanced electric and magnetic theory.

12-13. Introduction to Theoretical Physics. Throughout the year. 3 h. each semester.

Lectures, recitations, parallel reading.

A course of lectures, problems, and parallel reading designed to give the student a wider knowledge of modern physical theories and to enable him to read with some ease the current literature and advanced treatises on theoretical physics. The subjects will be chosen according to the needs of the class from the following:

First semester. Mechanics; molecular physics; heat and thermodynamics; kinetic theory of gases.

Second semester. Elasticity and sound; theory of light; theory of electricity and magnetism.

Prerequisite: Physics 1-2, 8, and calculus; differential equations recommended.

14-15. Advanced Experimental Physics. Either or both semesters. Hours and credit to be arranged.

Laboratory work on selected problems of considerable experimental difficulty, involving a somewhat advanced knowledge of theoretical physics.

Prerequisite: Physics 1-2, 3-4; and calculus; Physics 8 recommended.

16. Teachers' Training Course in Physics. Second semester. 2 h.

This course is designed, primarily, for those who expect to teach physics in secondary schools. Sources of material, methods, aims, laboratory equipment and instruction, things which should be emphasized, those which may be omitted, etc., will be considered both by lectures and by reports and discussions. Members of the class will also make a study of recent criticism of secondary physics teaching and considerable attention will be given to the arrangement of a course in secondary physics which should be satisfactory both to high schools and colleges.

Prerequisite: Physics 1-2, 3-4, or their equivalent.

17. Heat and Thermodynamics. Second semester. Lectures, two hours; laboratory, two hours. 3 h.

A study of the more important phenomena of heat and elementary thermodynamics.

Prerequisite: Physics 1-2, and calculus.

18. Light. Second semester. Lectures, two hours; laboratory, four hours. 4 h.

A course for advanced students covering the more important parts of geometrical and physical optics. Geometrical optics is developed from the standpoint of light waves rather than light rays.

Prerequisite: Physics 1-2, and calculus.

20. Descriptive Astronomy. First semester. Tu. Th. 8:00. 2 h.

A course conducted by means of lectures and recitations and designed to give a general knowledge of the principle facts, instruments, methods and theories of astronomy. It provides a complete course for those who desire that amount of information on the subject of astronomy which may be fairly expected of persons who have what is called a "liberal education," and fur-

nishes a necessary introduction to Course 21. The lectures are illustrated by slides and models. The telescope will be used occasionally.

Prerequisite: an elementary knowledge of trigonometry.

21. Introduction to Theoretical Astronomy. Second semester. M. W. F. 8:00. 3 h. Taken regularly in the junior year.

A course covering selected portions of elementary mathematical astronomy. Such subjects as the following will be considered: summary of spherical trigonometry, rectangular and spherical coordinates, equatorial and ecliptic coordinates, problems relating to time, latitude, longitude, right ascension, declination, parallax, figure and dimensions of the earth, eclipses, celestial mechanics, and theory of orbits.

Prerequisite: courses 8, 20, and calculus; differential equations recommended.

22. Descriptive and Practical Astronomy. Second semester. Tu. Th. 8:00. 2 h. Primarily for engineering students.

This course takes up descriptive astronomy only to the extent necessary to lay the foundation for an understanding of those parts of the subject of particular interest for engineers. The acquirement of astronomical data by personal observation, from the ephemeris and from other sources and its use in practical problems will be emphasized.

Prerequisite: trigonometry.

For courses for graduates only, see page 146.

CHEMISTRY

1. *General Inorganic Chemistry. Throughout the year. 11:30. 3 h.

A course of lectures and recitations dealing with the laws and theories of chemistry, together wtih a study of the elements and their most important compounds.

This course is especially designed for those who have not studied chemistry. Those electing Course 1 must also elect Course 2 for the first semester. For the second semester, either Course 2 or Course 3 may be elected. Students specializing in chemistry are advised to elect Course 3. Those presenting

*All students entering the Department of Chemistry and not presenting university credits in general inorganic chemistry must take Course 1.

satisfactory high-school credits may select courses 3 and 4 instead of 2.

2. General Inorganic Chemistry. Throughout the year. Tu. Th. 8:00 or 1:30. 2 h.
A detailed laboratory course supplementing Course 1.

3. Qualitative Analysis. Either semester. Tu. Th. 8:00 or 1:30. 2 h.
A course in the identification and separation of the more common bases and acids.

4. Qualitative Analysis. Either semester. Tu. Th. 8:00 or 1:30. 2 h.
A continuation of Course 3.

5a. Quantitative Analysis. First semester. Any three periods. 8:00 or 1:30. 3 h.
Laboratory. Gravimetric.
A beginners' course in quantitative analysis, comprising the more important separations and determinations.

5b. Quantitative Analysis. First semester. 10:00. 2 h.
Lectures.
A course in chemical calculations, together with the theory of precipitation and other chemical theories and laws relating to gravimetric analysis.
This course must be taken with Course 5a.

6a. Quantitative Analysis. Second semester. Any three periods. 8:00 or 1:30. 3 h.
Laboratory. Volumetric.
A course on the preparation of standard solutions and their applications in analysis.

6b. Quantitative Analysis. Second semester. 10:00. 2 h.
Lectures.
A course similar to Course 5b. This course must be taken with Course 6a.

7. Analysis of Iron and Steel. Either semester. Any two periods. 8:00 or 1:30. 2 h.
A practical course in the laboratory methods in use in the leading steel works.
Prerequisite: courses 5a, 5b, 6a, and 6b.

8. Sanitary Water Analysis. Second semester. Any two periods. 8:00 or 1:30. 2 h.

A course in the chemical and bacteriological examination of water with regard to its use for drinking purposes.

Prerequisite: courses 5 and 6.

9. Mineral Water Analysis. Either semester. Any two periods. 8:00 or 1:30. 2 h.

A course in the analytical methods used in the determination of the mineral and gaseous constituents of natural waters.

Prerequisite: courses 5 and 6.

10. Ore Analysis. Either semester. Any five periods. 8:00 or 1:30. 5 h.

A course in the analysis of ores, slags, etc., by the technical methods in use in mills and smelters.

Prerequisite: courses 5 and 6.

11. Gas Analysis. Either semester. Any two periods. 8:00 or 1:30. 2 h.

A course in the methods for determining the constituents of gas mixtures, especially as applied to illuminating gas and furnace gases.

Prerequisite: courses 5 and 6.

12. Organic Chemistry. Either semester. 2:30. 4 h.

Lectures.

A study of the methods of preparation and the properties of the more important organic compounds. Special stress is laid upon the theories underlying the subject and the proofs of the constitution of most of the substances studied.

13. Organic Chemistry. Either semester. Time to be arranged. 2 h.

Laboratory.

A laboratory course supplementing Course 12, designed to give practice in organic laboratory methods.

This course may be taken with Course 12.

14. Laboratory Practice in Organic Preparations. Either semester. Any three or five periods. 8:00 or 1:30. 3 h. or 5 h.

An advanced course in the preparation of typical aliphatic and aromatic compounds.

Prerequisite: Course 12.

15. Ultimate Analysis of Organic Compounds. Either semester. Any two periods. 8:00 or 1:30. 2 h.
A course in the determination of carbon, hydrogen, nitrogen, sulphur, and the halogens in organic compounds.
Prerequisite: courses 5, 6, and 14.

16. Food Analysis. Either semester. Any three or five periods. 8:00 or 1:30. 3 h. or 5 h.
A course giving practice in food laboratory methods.
Prerequisite: courses 5, 6, 12, and 14.

17. Physical Chemistry. First semester. 10:00. 3 h.
Lectures.
A course presenting the conceptions of the modern physico-chemical theories concerning the states of aggregation of matter, solutions, thermo-chemistry, equilibria, and chemical kinetics.

18. Physico-Chemical Laboratory Methods. First semester. 8:00 or 1:30. 2 h.
Laboratory practice in the determination of densities, molecular weights, thermo-chemical and optical constants, and the study of chemical statics and kinetics.
This course must be taken with Course 17.

19. Electrochemistry. Second semester. 10:00. 2 h.
Lectures.
A study of the phenomena of electrolysis, Faraday's Law, Hittorf's Transport-Numbers, the Law of Kohlrausch, the Solution Theory of Van't Hoff, the Dissociation Theory of Arrhenius, and the osmotic theory of the current of electric cells.

20. Electrochemical Analysis. Either semester. Any two periods. 8:00 or 1:30. 2 h.
Laboratory practice in the determination and separation of the common metals by rapid electrolytic methods.

21. Laboratory Practice in Electrochemistry. Second semester. Any two periods. 8:00 or 1:30. 2 h.
Exercises in electrical conductance, Faraday's Law, Transport-Numbers, and the study of electrical potentials of cells.
Prerequisite: Course 19, or may be taken with Course 19.

22. Physiological Chemistry. First semester. Time to be arranged. 2 h.
Lectures.
This course is given primarily for medical students, but is open to students in other departments.
Prerequisite: courses 13, and either 14 or 15.

23. Physiological Chemistry. First semester. Time to be arranged. 2 h.
Laboratory.
This course is supplementary to Course 22, and must be taken with it.
A laboratory study of the chemistry of enzymes, carbohydrates, salivary digestion, proteins, gastric and pancreatic digestions, bile, putrefaction products, feces, blood, milk, tissues, and urine.

24. Industrial Chemistry. Second semester. Time to be arranged. 2 h.
A lecture course on the principal chemical industries.

25. Drug Assaying. Second semester. Time to be arranged. 5 h.
A laboratory course giving practice in the official and standard methods for the identification, purity, detection of adulteration, and assay of official drugs.
Prerequisite: courses 5a, 5b, 6a, and 6b.

No laboratory period of less than three consecutive hours will be accepted.

BIOLOGY

I. GENERAL BIOLOGY AND SANITARY SCIENCE.

1-2. General Biology. Throughout the year. Tu. Th. 1:30, lectures; M. W. F. One hour each day, laboratory. 3 h. Open to all.
For those who wish to become acquainted with the principles of modern biology, with or without the intention of pursuing the subject farther. The course includes discussions of life processes, relations to environment, adaptation, distribution, principles of heredity and evolution, and the natural history of man. There is also offered a synopsis of classification and some account of the history of biology, with details concerning eminent naturalists.

3. Sanitary Science (Hygiene). Two divisions. First semester. Tu. Th. 10:00, 2:30; second semester, 11:30. 2 h. Open to all; recommended to freshmen.

The control of disease by methods of public and personal hygiene; school hygiene; domestic and family hygiene; vital statistics and their meaning; public health administration.

This or the next course may be taken with a three-hour course in botany or biology to count as five hours of required science in the freshman or sophomore years.

4. Sanitary Science (Disease Prevention). First semester, Tu. Th. 11:30; second semester, 10:00, 2:30. 2 h. Open to all. Recommended to freshmen.

The germ theory; infection; immunity; resistance; disease-prevention and control; milk, water, and food supplies.

5. Human Heredity and Eugenics. Second semester, W. 10:00. 1 h. For students above fresnman year who have had at least five hours in the department.

6. Principles of Heredity. First semester. Tu. Th. 2:30. 2 h. For seniors who have had at least ten hours in the department.

II. BOTANY.

1-2. General Botany. Throughout the year. M. W. F. 9:00, lectures; Tu. Th. 9:00-11:00, laboratory. 5 h. For those who have had some elementary botany (or biology) and elementary chemistry.

The plant kingdom from algae to seed-plants; morphology, physiology, ecology, evolution; essentials of heredity.

3. Elements of Botany. First semester. W. 9:00, lecture; Tu. Th. 8:00-10:00, laboratory or field work. For those who have had no previous work in botany (or biology).

An elementary course adapted to students of college age.

4. Forest Botany. First semester. Daily, 8:00. Two recitations and three one-hour laboratory periods. 3 h. Open to those who have had some elementary botany (or biology).

Study of trees; woods and other forest products.

5. Economic Botany. Second semester. Daily. 8:00. 3 h.

Plant products useful to man; grains, fruits, garden vegetables, ornamental plants, textile fibers, spices, drugs; the world's food supply; history of cultivated plants and of the

breeding of new and improved varieties; heredity in plants.
Prerequisite: elementary botany or biology.

6. Ecology and Taxonomy.
Chiefly field work; a study of plants in relation to climate, soil and other factors; classification.
Given at the Mountain Laboratory, Tolland, Colorado, during the summer session.

7. Special Plant Morphology. First semester. 2 h.
Prerequisite: General Botany.

8-9. Biological Seminar. Throughout the year. Tu. Th. 3:30. 2 h. For seniors who have had at least ten hours in the department.
For the first semester the course will be on Principles of Heredity.

10. Bacteriology. Second semester. Tu. Th. 11:30.
A general course given by Professor Clough T. Burnett of the School of Medicine.

For courses for graduates only, see page 147.

III. ZOOLOGY.

1-2. General Zoology. Throughout the year. M. W. F. 2:30. lectures; Tu. Th. 1:30-3:30, laboratory. For those who have had high-school zoology (or biology) or equivalent, and some chemistry.
The animal kingdom from protozoa to man; morphology, physiology, ecology, evolution. During the second semester attention will be given to the vertebrates of Colorado.

3. General Physiology. First semester. M. W. F. 8:00. 3 h.
The physiology of animals, especially man.
Prerequisite: elementary chemistry, and biology or zoology.

4. Physiology (Laboratory Course). Second semester. 2 h.
Prerequisite: General Physiology.

5. Cytology. First semester. 3 h. Not given in 1913.
Study of cells; importance in development and heredity.

6. Field Zoology.
Animals in their natural surroundings; collecting; preserving, etc.; relation to physiographic and climatic factors.
Given at the Mountain Laboratory, Tolland, Colorado, during the summer session.

7-12. Entomology, Ichthyology, or Mollusca. Both semesters. 3 h. For students taking a major in zoology, or others on consultation.

13-14. Biological Seminar. Both semesters. Tu. Th. 3:30. 2 h. For an account of this course see under Botany.

15. Ecology of Animals and Plants. Second semester. 3 h. Prerequisite: zoology (or biology), and botany.

16. Human Anatomy. Open to seniors who are also matriculated in the School of Medicine.

Note—Students intending to specialize in biological subjects are advised to spend at least one summer at the Mountain Laboratory at Tolland, Colorado. (See Summer Session announcement.)

For courses for graduates only, see page 148.

GEOLOGY AND MINERALOGY

I. GEOLOGY AND PHYSIOGRAPHY.

A. Courses for Undergraduates.

1-2. General Geology. Throughout the year. Daily. 1:30. First half of first semester: M. W. F. 1:30, lectures; Tu. Th. 1:30-4:30, field work. Second half of first semester: M. Tu. W. F. 1:30, lectures; Th. 1:30-3:30, laboratory work. Second semester: M. Tu. W. F. 1:30, lectures; Tu. 1:30-3:30, laboratory work. 5 h. each semester.

The course will consist of a study of the principles of geology, with special reference to the geological history of North America. Field study will be an important feature of the course. (By special arrangement, students physically unable to take the field work, may register for 4 hours' credit in the first semester.)

Students, who have completed Course 3-4 and who desire Course 1-2, will receive four hours' credit for the first semester and full credit for the second semester. If Course 3-4 and Mineralogy 1-2 have been completed the student may register for three hours' credit in the first semester, and full credit in the second semester.

Prerequisite: high-school chemistry or college chemistry.

3-4. Physiography. Throughout the year. M. W. 9.00, lectures; F. 9:00-11:00, field or laboratory. 3 h. each semester.

This course will be adapted to the needs of those who expect to teach physical geography in the high schools. It will include a study of the atmosphere, the waters of the earth and their work as geological agents, the rocks, the agencies of geological and geographical change, and the development and history of the physical features of the earth. Large use will be made of the local field for illustrative purposes. This course may be taken with Mineralogy course 1-2 to complete ten hours' science.

Students who have completed Course 1-2 and who desire Course 3-4, will receive two hours' credit for the first semester and full credit for the second semester.

5-6. Engineering Geology. Throughout the year. M. W. F. 11:30, with two hours' additional laboratory work per week, arranged to suit the convenience of the class. 3 h. each semester.

The course will include a general discussion of the principles of geology, and a study of the geological materials important in engineering.

B. Courses Open to Undergraduates and Graduates.

7-8. Economic Geology. Throughout the year. First semester, M. W. F. 10:00; second semester, M. W. F. 11:30, with two hours' additional laboratory work a week, arranged to suit the convenience of the class. 3 h. each semester.

A study of the mineral resources of the United States, including the origin and character of ore bodies, the ores of iron, copper, lead, zinc, gold, silver, etc.; the extraction and uses of the metals; fuels, building materials, fertilizers, mineral waters, etc.

Prerequisite: Course 1-2, or Course 3-4, and Mineralogy 1-2; Mineralogy 3-4 is also strongly recommended.

9-10. Advanced Geology. Throughout the year. M. W. F. 2:30. 3 h. each semester. Given on alternate years. Given in 1913-1914.

A special study of the problems of dynamic, structural and historical geology.

Prerequisite: Course 1-2; Mineralogy 3-4 is strongly recommended.

11-12. Geology of Colorado. Throughout the year. M. W. F. 2:30. 3 h. each semester. Given on alternate years. Not given in 1913-1914.

A study of the dynamic, structural, historical, and economic geology of Colorado.

Prerequisite: Course 1-2, or Course 3-4, and Mineralogy 3-4.

13-14. Advanced Field Geology. Throughout the year. First semester, M. W. F. 1:30 to 4:30; second semester, to be arranged. 3 h. each semester. Given on alternate years. Not given in 1913-1914.

The course is designed to train the student in all kinds of geological field work. The methods used are those employed by the U. S. Geological Survey.

Prerequisite: superior work in Course 1-2; registration only after consultation with the Department of Geology.

15. Advanced Physiography. Second semester. Tu. Th. 9:00-11:00. The course will be a continuation of the work of Course 3-4, and will deal largely with the laboratory side of the work, and the methods of teaching physical geography and physiography.

Prerequisite: Course 1-2, or Course 3-4.

16. Geology. A Culture Course. First semester. M. F. 3:30. 2 h. Open to juniors, seniors, and graduates.

A lecture and reading course for general culture rather than scientific training. It is intended to awaken an appreciative interest in that science which is so grandly illustrated in Colorado.

Prerequisite: a desire for a broader outlook upon earth history.

This course does not count toward the science requirement, nor will credit be given to students who have credit for Course 1-2.

17-18. Paleontology. Throughout the year. 3 h. each semester. The course is open to advanced students in geology, and biology, on consultation with the professor.

It will include lectures on the principles of paleontology, and the facts concerning the development of types which characterize the several periods of geologic time; laboratory work in the identification, classification and description of fossil ani-

mals and plants, and the discussion of their stratigraphic and biologic position and significance.

NOTE—Students expecting to teach high-school geology or physical geography are advised to take courses 1-2, 3-4, 11-12, or 3-4, 11-12; and Mineralogy, 1-2.

For courses for graduates only, see page 148.

II. MINERALOGY AND PETROLOGY.

A. Courses for Undergraduates.

1-2. ELEMENTARY MINERALOGY AND PETROLOGY. Throughout the year. Tu. Th. 9:00-11:00. 2 h. each semester. Open to all who have not had college geology or mineralogy.

The course is planned for those who want to know the common minerals and rocks, their relations and properties, but who lack the time or preparation for the more advanced courses in geology and mineralogy.

May be taken with geology 3-4 to complete ten hours of science.

3-4. DETERMINATIVE MINERALOGY. Throughout the year. Tu. 8:00, lectures and recitations; M. W. F. 8:00-10:00, laboratory. 3 h. each semester.

The course includes elementary crystallography, descriptive mineralogy, the determination of minerals of economic importance by chemical and physical tests, and the study of collections of economic minerals.

Prerequisite: a course in general inorganic chemistry.

B. Courses Open to Graduates and Undergraduates.

5-6. ADVANCED MINERALOGY. Throughout the year. Th. 8:00, lectures and recitations; M. 8:00-10:00, laboratory. 2 h. each semester.

In this course minerals not previously studied are determined in the laboratory; a large part of the time is given to the rock-making minerals. Descriptive mineralogy is the chief subject of the lectures and recitations.

Prerequisite: Course 3-4.

8. GEOLOGICAL MATERIALS FOR INDUSTRIAL CHEMISTRY. Second semester. M. W. F. 10:00. 3 h.

A study of the occurrence, properties, and uses of geological products of economic value in chemical industries.

Prerequisite: a year in general chemistry.

9-10. PETROGRAPHY. Throughout the year. 3 h. each semester. Lectures, recitations, laboratory.

The mineral and chemical composition of rocks, their occurrence, origin, structural features and classification, and a detailed study of the more important rock families. The study of thin sections under the microscope forms an important part of the course. This course should be taken in the senior year by students who expect to do graduate work in geology.

Prerequisite: Geology 1-2, Mineralogy 3-4, and 5-6, but may be taken with Course 5-6.

For courses for graduates only, see page 149.

PHILOSOPHY

1. HISTORY OF PHILOSOPHY. Both semesters. Tu. Th. 11:30. 2 h. Open to all.

   This course may be begun in either semester.

2. INTRODUCTION TO PHILOSOPHY. Both semesters. M. W. F. 11:30. 3 h. Open to all.

3. HISTORY OF ETHICS. First semester. Tu. Th. 10:00. 2 h. Open to all.

4. ESTHETICS. Second semester. Tu. Th. 10:00. 2 h. Open to all.

5. HISTORY AND PHILOSOPHY OF EDUCATION. Both semesters. M. W. F. 10:00. 3 h. Open to all.

6. SOCIAL ETHICS. Both semesters. Daily. 3:30. 5 h. Open to all.

7. SEMINAR.

   Present tendencies in logic, epistemology, and metaphysics.

PSYCHOLOGY

1. GENERAL PSYCHOLOGY. (Education 1.) Two sections. First semester. M. W. F. 1:30, 2:30, with an additional hour to be arranged for recitations and conferences. 3 h.

   This course gives, by means of lectures, recitations, experiments, and demonstrations, a general survey of the essential

facts and fundamental laws of mind. It is prerequisite to all other courses in psychology and to the courses in education. The student who expects to make psychology or education a major should take this course in his sophomore year.

2. Comparative Psychology. (Education 2.) Second semester. M. W. F. 2:30. 3 h.

Continuation of Course 1.

A systematic study of mental development in the race and in the individual. The course will sketch the development of the nervous impulse, of animal sense organs with reference to their habits, of instincts and intelligence in animals, and in cases of arrested development. With these simpler facts as a basis the development of mental functions in the individual in childhood and adolescence will be discussed with reference to educational theory.

3. Advanced Psychology. First semester. Tu. Th. 9:00. 2 h.

Lectures, discussions, readings, and a thesis.

An intensive study of selected problems; introspective exercises and an analytic study of mental phenomena.

Prerequisite: Course 1 or its equivalent.

4. Pathological Psychology. Second semester. Tu. Th. 9:00. 2 h. Open on consultation.

Lectures, readings, and a thesis.

Disorders of sensation, memory, imagination, association, the emotions and volition. As Course 2 traces the development of mental functions this course will discuss the order of their impairment. Mental hygiene and a study of such psychoses as throw light on the general and genetic problems of psychology.

Prerequisite: two courses in psychology.

5-6. Experimental Psychology. Throughout the year. Tu. Th. 1:30-3:30, laboratory; 3:30, lecture. 3 h.

This course serves as an introduction to experimental psychology and aims to familiarize the student with modern psychological methods, apparatus, and results.

First semester. Typical experiments and demonstrations in the psychology of the senses, feeling and movement, with a study of individual differences.

Second semester. Experiments in perception and the higher mental processes; time, intensity, and extensity of mental phenomena; mental and physical tests and measurements; statistical methods.

7. Educational Psychology. (Education 2.) Second semester. M. W. F. 1:30. 3 h.
Continuation of Course 1.
Lectures, readings, and a thesis.
The principles of psychology and the results of experimental pedagogy which are modifying the course of study and methods of instruction in the older schools of this country will be presented in this course. It is recommended that those students who are primarily interested in education take this course as a continuation of Course 1.
Prerequisite: Course 1, or its equivalent.

8. Social Psychology. (Education 15.) First semester. Tu. Th. 9:00. 2 h.
A discussion of mind from the point of view of the social group; the spread of ideas, emotions, and conduct within the group; the means of this spread; instinct, emotion, sentiment, and imitation; the psychology and functions of language; habit and attention; human occupations and their dependence upon instinct and imitation; occupations and institutions; mob mind, fads, crazes; social soundness and unsoundness; personality, as socially determined.
Prerequisite: courses 1 and 2, or their equivalents.

9. Child Study. First semester. 2 h.
A systematic study of the physical and mental development of children; a discussion of the facts, scientifically determined, of the psychology of childhood and adolescence, with their educational applications.
Prerequisite: Course 7, or its equivalent.

10. Anatomy of the Central Nervous System.
See announcement of School of Medicine.

For courses for graduates only, see page 150.

EDUCATION

1. General Psychology. (Psychology 1.) Two sections. First semester. M. W. F. 1:30, 2:30, with an additional hour to be arranged for recitations and conferences. 3 h.

2. Educational Psychology. (Psychology 7 or 2.) Second semester. M. W. F. 1:30 or 2:30. 3 h.

3-4. Principles of Education. Throughout the year. M. W. F. 8:00. 3 h.

An elementary discussion of the nature and scope, aims, means, and materials of Education; an examination of those facts, theories, and hypotheses of biology, physiology, anthropology, psychology, sociology, and economics which would seem to have significance for educational theory; a synthesis of what is found to be pertinent into a working creed for the educator.

Prerequisite: courses 1 and 2, or their equivalents.

5-6. Principles of Teaching:

a. Teaching in Elementary Schools.

b. Teaching in Secondary Schools. Either semester. Tu. Th. 8:00. 2 h.

The application of theories in the domain of practice; the method and methods of the teacher in the elementary or secondary schools; comparative study of general and special methods; improvements in methods; class-room problems and their solution; the learning process and its direction; the nature and conditions of thought; how we think and learn to think; how to study; how to teach others to study; essentials in the learning and teaching of the elementary or secondary school subjects. This course must be taken with Practice Teaching; students will be assigned to the a or b section, according as they are assigned in Practice Teaching; the two sections will meet as one class for a portion of the time.

7-8. Practice Teaching and Class-Room Management. Either or both semesters. Hours to be arranged. 4-5 h.

Practice teaching is done in the public schools of Boulder, both elementary and secondary. The student teaches each day. The scheme is to separate from the regular classes a few who

need instruction in a small group and under close supervision.

Prerequisite: courses 1, 2, 3 and 4, or their equivalents, and senior standing; those who register for this course must register also for Principles of Teaching.

9. History of Ancient and Mediæval Education. First semester. M. W. F. 10:00. 3 h. Open to all except freshmen.

This course deals with the history of culture and civilization, of social and intellectual as well as of definite school influences in China, India, Persia, and other Asiatic countries, as well as in Greece and Rome. It also deals with primitive Christian and Mediæval education.

10. History of Modern Education. Second semester. M. W. F. 10:00. 3 h. Open to all except freshmen.

In this course it is necessary to confine the work more strictly to academic education. The course deals with all the great reform movements from the Revival of Learning to the present day.

11-12. Comparative Study of School Systems. Throughout the year. Tu. Th. 10:00. 2 h.

A detailed comparative study of the school systems of Germany, France, England, and the United States as to ideals, organization, administration, methods, and efficiency.

Prerequisite: courses 1, 2, 3, 4, 9, 10, or their equivalents.

13. General Anthropology. First semester. M. W. F. 9:00. 3 h.

An introductory study of the natural history of man; a survey of his physical and intellectual evolution; his agreements with and divergencies from allied animals; theories of time and place of origin; the main divisions of mankind and their general physical and mental characteristics; the general laws of man's existence and development, his relation to the rest of nature; beginnings and transmission of culture; chief divisions of primitive culture; prehistoric archæology.

14. General Ethnology. Second semester. M. W. F. 9:00. 3 h.

A comparative study of typical tribes and peoples in their respective geographical habitats; the cultural conditions as differentiating peoples; the variety and range of human activities; the elementary thoughts of mankind—primary elements of culture and mental life; the origin, growth, and present con-

dition of the social, religious, industrial, political, and scientific occupations and institutions of various peoples; the identity of "the human" in the variety of peoples; culture grades and their causes.

15. Social Psychology. (Psychology 8.) First semester. Tu. Th. 9:00. 2 h.

16. Education and Society. Second semester. Tu. Th. 9:00. 2 h.
A study of the interrelations of education and society; society's responsibilities to, and need of, the school; the school's duty to, and expectations of, society; educational institutions and forces other than the school; society an educational device.
Prerequisite: courses 1, 2, 3, and 4, or their equivalents.

17. Advanced Practice Teaching. Either or both semesters. Hours to be arranged. 2-5 h.
A study by observation and experiment of particular and advanced problems of instruction and supervision.
Prerequisite: Course 7 or Course 8, and instructor's permission; must be taken in connection with the Practicum in Education.

18. Practicum in Education. Either or both semesters. Tu. 7:30 p. m. 1 or 2 h.
Subject-matter will vary from year to year; special examination and investigation of selected problems of importance in educational theory and practice; provision for independent investigations and for research in special problems; the work of a journal club by devoting some time to current educational literature, events, contemporary educators, articles, books, educational news, and experiments.
Prerequisite: instructor's permission.

HISTORY

1. General Europe. 376-1789. Throughout the year. M. W. F. 2:30. 3 h.
Lectures, text-book, collateral readings.
A survey of the history of the western European nations from the invasions of the Germans to the French Revolution. The first semester will end at the year 1300.

2. The French Revolution and the Napoleonic Era. First semester. M. W. F. 9:00. 3 h.

An intensive study of the causes, events, and institutions of the French Revolution and the Napoleonic Era, with a consideration of the permanent influences of the period on France and other countries. This course and Course 3 bring the narrative of General Europe to the present time.

Prerequisite: Course 1.

3. EUROPE IN THE NINETEENTH CENTURY. Second semester. M. W. F. 9:00. 3 h.

Lectures and collateral readings.

After a brief outline of the institutions and ideals of the Revolutionary and Napoleonic period, the course will deal with the development of the principal nations of modern Europe.

Prerequisite: Course 1.

4. AMERICAN HISTORY. 1760-1870. Throughout the year. M. W. F. 3 h. Not open to freshmen.

Lectures, text-book, collateral readings.

The political history of the United States, from the period of the Revolution through the Civil War. The introductory course in United States History.

5. ENGLISH HISTORY. Throughout the year. 3 h.

Lectures, text-book, collateral readings.

The political, social, and economic history of England from the beginnings to the present time. This course or Course 6 is required by the School of Law as an entrance requirement.

Prerequisite: Course 1, except for students preparing to enter the School of Law.

6. ENGLISH CONSTITUTIONAL HISTORY. Throughout the year. Tu. Th. 11:30. 2 h.

This course or Course 5 is required by the School of Law as an entrance requirement.

Prerequisite: Course 1, except for students preparing to enter the School of Law.

7. THE HISTORY OF GREECE. First semester. 3 h. Not open to freshmen.

Lectures, text-book, collateral readings.

The contributions of Babylonia, Egypt, Phoenicia, and the "Minoan" peoples to civilization; the political history of Greece to the death of Alexander the Great; the formation of the Hellenistic kingdoms, and the spread of Hellenism; the political

background of the chief developments in Greek art, literature, and philosophy; concluding with an outline study of Greek political science.

8. The History of Rome to 476 A. D. Second semester. 3 h. Not open to freshmen.

Lectures, text-book, collateral readings.

The unification of Latium, Italy, and the Mediterranean basin under the sway of Rome; the incorporation of the contributions of Greece and of Judea into the civilization of the Mediterranean peoples.

9. The Colonial Expansion of Europe. Throughout the year. Tu. Th. 10:00. 2 h. Not given in 1913-1914.

A study of European colonial policy and expansion from the sixteenth century to the present day. The major part of the course will be devoted to the problems and government of the colonies in the nineteenth century.

Prerequisite: Course 1.

10. German History from the Beginnings to the Present Time. Throughout the year. Tu. Th. 11:30. 2 h.

Special stress will be laid on the cultural influence of Germany, the nature and workings of the present German Empire, and the political and economic influences of Germany as a world power.

11. Modern England. First semester. 2 h.

A detailed study of selected problems in the history of England since 1832.

Prerequisite: two years of history.

12. Historical Method and Bibliography. First semester. 2 or 3 h. Required of all junior and senior students majoring in history, and recommended to all that are aiming to teach history.

A course designed to acquaint students majoring in history with the various bibliographical aids, and the methods used in testing historical sources and in writing history. There will be exercises in the use of sources and bibliographies.

Prerequisite: two years of history.

13. The American Colonies. First or second semester. 2 or 3 h. Not open to freshmen.

Lectures and collateral readings.

The European background of American Colonial history; development of the social, economic, and political life of the colonies; the growth of American principles and institutions; the expansion of the colonial settlements to 1760.

14. History of the West. 1763-1890. Throughout the year. 2 h. Lectures, readings, reports.

The conditions of migration, the institutions of frontier communities, and the influence of the West upon national development.

Prerequisite: two years of history, or Course 4.

15. The History and Literature of the Hebrews to 300 B. C. First semester. 2 h. Not open to freshmen.

Lectures and collateral readings.

16. The History and Literature of the Jews. 300 B. C. to 135 A. D. Second semester. 2 h. Not open to freshmen.

Lectures and collateral readings.

17. The Mediæval Church and the Reformation. Throughout the year. 3 h.

Lectures and reports.

A study of the life and the institutions of the Church from its origin through the period of the Reformation. The early organization of the Church and the persecutions, the rise of the Papacy and the greater monastic orders, the mediæval heresies and attempts at internal reform, and the culmination of the later mediæval struggles in the rise of the new churches of the sixteenth and seventeenth centuries.

Prerequisite: two years of history.

18. English Social and Industrial History. Throughout the year. 2 h.

A detailed study of certain phases of England's economic development; the mediæval manor and gilds; the rise of commerce; the Tudor system; the development of a colonial policy.

Prerequisite: two years of history.

19. The United States. 1787-1803. For advanced students only. Lectures and reports.

A detailed study of the period of the formation of the Union.

Prerequisite: two years of history.

20. The Near Eastern Question. First semester. 2 h. Not given in 1913-1914.

Lectures, reports, collateral readings.

The development and decline of the Ottoman Empire; the aggressions of Austria and Russia; the rise of the Balkan States; the Egyptian problem; the present status of the Near Eastern Question; the interests of the powers in the Near Eastern Question.

Prerequisite: two years of history.

21. Modern Internationalism. Second semester. 2 h.

Lectures, reports, collateral readings.

A study of the conditions making possible the growth of present-day internationalism; the existing international institutions, with special stress on The Hague Conferences; The Hague Tribunal; the Postal Union; various other official and private international institutions.

Prerequisite: two years of history.

22. The Renaissance. Second semester. 2 h. Open to juniors and seniors who have had Course 1.

Lectures, reports, collateral readings.

A study of the political and economic conditions of Italy and their bearing on the Renaissance movement; special stress is laid on the cultural features of the movement in Italy, and the spread of its influence in other European countries.

For courses for graduates only, see page 150.

ECONOMICS AND SOCIOLOGY

1. ECONOMICS.

1. Development of Industrial Society. Two divisions. First semester. M. W. F. 8:00, 2:30. 3 h.

Recitations, readings, reports.

Outlines the English industrial development from the twelfth century to the present in order to show the genesis of modern industrial customs and rights.

This course is designed to be introductory to all courses in economics.

2. Economic History of the United States. Two divisions. Second semester. M. W. F. 8:00, 2:30. 3 h.

Recitations, readings, reports.

Traces the growth of industry, agriculture, commerce, transportation, population, and labor from the simple, isolated, agri-

cultural communities of the colonies, to the complex industrial and commercial society of today.

Logically follows Course 1.

3. General Principles of Economics. Two divisions. First and second semesters. M. W. F. 9:00, 10:00. 3 h. Not open to freshmen.

The purpose of this course is to teach fundamental principles; to open the field of economics in the way most helpful to further and more detailed study of special problems, and to give those not intending to specialize in the subject an outline of the general principles of economics.

4. Advertising. Second semester. Tu. Th. 9:00. 2 h.

Prerequisite: Principles of Economics, and psychology.

5. The Theory and Application of Statistics. First semester. Tu. Th. 2 h.

This course aims to present the subject of statistics as an instrument of research. It is designed for all students of social and economic problems.

6. Economic and Commercial Geography. First semester. M. W. F. 3 h.

A study of the influence of the geographic environment on the economic life and development of peoples.

7. History of Commerce. Second semester. M. W. F. 3 h.

A study of the development of the world's commerce with special attention to modern commercial organization.

8. Labor Problems. First semester. Tu. Th. 11:30. 2 h.

Not open to freshmen.

Recitations, reports, lectures.

Such subjects as woman and child labor, immigration, labor organizations and employers' associations, profit sharing, co-operation, and industrial education, are studied in their relation to the quantity and conditions of labor.

9. Money and Banking. Second semester. Tu. Th. 9:00. 2 h.

Lectures, readings, discussions.

The history and theory of money, credit, and banking; special attention given to present day problems of money and banking in the United States.

Prerequisite: Course 3.

10. TRANSPORTATION. Second semester. Tu. Th. 8:00. 2 h.
Recitations and readings.
Studies in the development and regulation of common carriers; special emphasis laid upon steam and electric railways and upon ocean and inland commerce.
Prerequisite: Course 3.

11. CORPORATION FINANCE. First semester. Tu. Th. 8:00. 2 h.
Recitations and reports.
A study of the methods of promoting and financing large industrial corporations.
Prerequisite: Course 3.

12. TAXATION. First semester. Tu. Th. 9:00. 2 h.
A general study of the theory of public finance and a more detailed study of the revenue systems in the United States.
Prerequisite: Course 3.

13. THEORY OF INVESTMENTS. (LIFE INSURANCE, ETC.) First semester. 2 h.
Given in the Department of Mathematics.

14. THEORY AND PRACTICE OF ACCOUNTING. Second semester. M. W. F. 9:00. 3 h.

15. GREAT INDUSTRIES. Second semester. M. W. F. 8:00. 2 h.
For juniors and seniors who have taken Course 3.
Recitations, readings, reports.
An inquiry into the economies which encourage industry to integrate; the possibilities for evil under the present systems; and the opportunity for social profit under a system of regulation.

16. BUSINESS ORGANIZATION AND SCIENTIFIC MANAGEMENT. Second semester. Tu. Th. 2 h.
A study of the forms of organization to effect business control; principles of organization in production, office, and sales management; use of cost accounting; systems of wage payments; principles of scientific management.

For courses for graduates only, see page 152.

II. SOCIOLOGY.

1. PRINCIPLES OF SOCIOLOGY. Throughout the year. Tu. Th. 10:00. 4 h. For juniors and seniors.
Lectures, readings, discussions.
In this course an attempt is made to formulate the fundamental laws of association, with special reference to their re-

lation to social progress. Such topics as the influence of the physical environment, natural selection, warfare, division of labor, sex and sexual selection, heredity, imitation, social oppositions, art, science, and religion, will be discussed with reference to their effects on social progress.

2. Problems in Sociology. Second semester. Tu. Th. 2:30. 2 h. Lectures, assigned readings, discussions.

This course takes up the study of our various social institutions, placing special emphasis upon the family, its origin, function and problems. The course includes a study of immigration, race problems, poverty, crime, and kindred subjects.

Prerequisite: Economics 3.

3. Socialism. First semester. Tu. Th. 2 h.

Proposals for the reorganization of society on a socialistic basis will be studied historically and critically. Writings of the early French and English socialists will be reviewed, but the major part of the course will be devoted to the study of German scientific socialism.

Prerequisite: Economics 3.

For courses for graduates only, see page 152.

III. POLITICAL SCIENCE.

1. National Administration. First semester. M. W. F. 3 h. Open to freshmen.

An elementary course in American Government, intended as a preparation for advanced work in political science, for teaching in secondary schools, and for good citizenship.

2. State and Local Government. Second semester. M. W. F. 3 h. Open to freshmen.

Deals with problems in state and local government, development of state institutions, new experiments in legislation and administration, workings of our courts, state police development, civil service and the short ballot movement; special emphasis on Colorado.

3. Comparative European Government. Second semester. M. W. F. 3 h. Not open to freshmen.

A study of the organization and workings of the great European powers, especially Great Britain, France, Germany and Switzerland; party systems and cabinet government in these countries.

Prerequisite: Course 1 or Course 2.

4. Municipal Government. First semester. M. W. F. 3 h.
A study of city charters, methods of city organization and administration, relation of the city to the state, home rule movement, commission government, short ballot and other reforms, comparisons with European cities.

5. Political Parties and Party Problems. First semester. Tu. Th. 2 h.
This course deals with the organization of political parties. party machinery, and such current party problems as direct primaries, proportional representation, the initiative, referendum, recall, civil service, corrupt practices acts and methods of financing political parties.

6. Consular and Diplomatic Service. First semester. Tu. Th. 2 h.
Outline of the growth of international relations, the mode of conducting foreign affairs, methods of making, interpreting and terminating treaties and compacts, organization, duties and immunities of consular and diplomatic agents, diplomatic relations with Latin America and the Far East.

7. International Law. Second semester. Tu. Th. 2 h. Not open to freshmen and sophomores.
A study of the nature, sources and sanction of international law; status of nations; rules of peace, neutrality and war; doctrine and rules of neutrality; international rights of persons and property in time of peace and war; and the Hague Peace Conference.
Prerequisite: at least one course in political science.

8. Municipal Ownership and Other City Problems. 2 h.
A study of the origin and expansion of municipal functions; municipal ownership vs. private ownership; public utilities regulation, state control, physical valuation, rates, service and efficiency.

MUSIC

1. Harmony. Throughout the year. M. W. F. 11:30. 3 h.
Text-books: Jadassohn, Bussler.

2. Course 1 Continued. Throughout the year. Tu. Th. 11:30. 2 h.

Text-books: Jadassohn, Bussler.
Prerequisite: Course 1.

3. COUNTERPOINT. Throughout the year. Tu. Th. 10:00. 2 h.
Prerequisite: courses 1 and 2.

4. CANON AND FUGUE. Throughout the year. 2 h.
Prerequisite: courses 1, 2 and 3.

5. COMPOSITION AND ORCHESTRATION. Throughout the year. 2 h.
Prerequisite: courses 1, 2 and 3.

6. HISTORY OF MUSIC. Throughout the year. Tu. 3:30. 1 h.
Open to all.
Lectures.

7. AESTHETICS AND PHILOSOPHY OF MUSIC. Either semester. W. 7:30. 1 h. Open only to graduate students and seniors.
Seminar.

ELECTIVES IN THE PROFESSIONAL SCHOOLS

In accordance with the general plan outlined on page 63, the courses tabulated below may be elected in the professional schools.

COLLEGE OF ENGINEERING.

The following subjects in the College of Engineering may be taken by all students in the College of Liberal Arts:

Drawing, 6; Descriptive Geometry, 3; Surveying, 8; Least Squares, 2; Applied Mechanics, 4; Graphic Statics, 3; Kinematics, 2; Hydraulics, 3; Thermodynamics, 2; Dynamo Electric Machinery, 4.

SCHOOL OF LAW.

Students in the College of Liberal Arts in their fourth year who declare their intention of proceeding to the degree LL.B. in the University of Colorado, may be allowed credit for twenty-two hours on the completion of all work required in the freshman year of the School of Law.

SCHOOL OF MEDICINE.

The two degrees of M.D. and B.A. may be conferred on the completion of seven years' work, one year's credit (30 hours) being allowed on the completion of the full freshman work in the School of Medicine.

COLLEGE OF COMMERCE

FACULTY

Frederick A. Bushee, Ph.D.,
Secretary of the College of Commerce.

The Faculty of the College of Commerce consists of Professors and Instructors whose work contributes to the courses.

GENERAL STATEMENT

FUNCTION

The College of Commerce was opened September, 1906. Its purpose is to provide professional training for the practical demands of business. It aims to prepare men for careers in Domestic and Foreign Commerce and Banking, Insurance, Transportation, Trade and Industry, Journalism, and in branches of the Public Service, like the Consular, in which a knowledge of business is essential. Heretofore universities and colleges have done all they could for the young man who wishes to become a minister, teacher, lawyer, physician, journalist or engineer. The College of Commerce is developed in response to the demands of (1) enlarged commercial operations, (2) the public service, (3) the desire of parents to give their sons a college education and at the same time prepare them for their life work in business.

It is well known that the knowledge of the details of any particular line of business can be acquired only by actual experience. But the broad training given students in this department of the University will enable them to acquire the routine technicalities of any concern more easily than those whose minds have not been made flexible and acute by systematic training. They will thus the more readily assume positions of leadership and responsibility in the business world.

The curriculum of the College of Commerce is prepared with the following aims in view: (1) To furnish a certain amount of culture work which is the mark of college training. (2) To familiarize the student with the nature and workings of the industrial organism. This is attempted by studies in commercial geography, economics and history of commerce, transportation, banking, business organization and management. (3) To impart a certain amount of knowledge of the physical and chemical sciences and their applications to the industrial arts. (4) To give an acquaintance with the articles of commerce and the various industrial processes through which they pass. (5) To make the student acquainted with the principles of commercial law. (6) To supply an equipment in modern languages. (7) To afford an opportunity to acquire some knowledge of a particular line of trade.

The work of the College of Commerce is on the same high plane as that of the other undergraduate departments of the University. The entrance requirements are the same and an equal number of hours' work is required for the Bachelor's degree.

ORGANIZATION

The College of Commerce offers four courses: 1. Banking. 2. Manufactures. 3. Journalism. 4. Trade, Transportation and Consular Service.

REQUIREMENTS FOR ADMISSION

The requirements for admission are the same as for the College of Liberal Arts. See page 41.

*SUBJECTS IN THE COLLEGE OF COMMERCE

(REQUIRED FOR GRADUATION.)

FRESHMAN YEAR

	I. Banking	II. Mfrs.	III. Jour.	IV. Trade, Etc.
1. ENGLISH LANGUAGE	6	6	6	6
2. SCIENCE	10 Chem. ⟩ 10	6	10 Chem. ⟩ 10	6
3. HISTORY	6	6	6	6
4. FRENCH, GERMAN OR SPANISH	10	10 French ⟩ 10		10
	32	32	32	32

SOPHOMORE YEAR

5. ENGLISH LANGUAGE OR HIST. ENG. LIT.	4	4	4	4
6. MATH., SCIENCE	Math ⟩ 10	Math. ⟩ 10 Chem. ⟩ 10	——	Econ. Geol., Econ. Bot. ⟩ 10
7. HISTORY OR ECONOMICS	6	——	Hist. ⟩ 6 Econ. ⟩ 10	6
8-9. FREE ELECTIVES	10	6	10	10
	30	30	30	30

*In addition to regular courses in the departments open to election, provision will be made for lectures on current problems, and practical topics by prominent business men.

JUNIOR AND SENIOR YEARS

LAW	†{10 20}	†[10 10]	10	†{10 20}
ECONOMICS			——	
ECON. GEOL., ECON. BOT., PHYSICS	——	[10]	——	——
ENGLISH LANG. AND LIT.			†{20 10}	——
CLASSICS (in Eng.)				——
FREE ELECTIVES	28	28	18	28
	58	58	58	58

The following courses are especially recommended for students in the College of Commerce:

Advertising.
Business Organization and Scientific Management.
History of Commerce.
Commercial Geography.
Economic History of the United States.
Taxation.
Transportation.
Corporation Finance.
Money and Banking.
Journalism.
Diplomatic and Consular Service.
Theory and Practice of Accounting.
Life Insurance.

For a further description of these courses, see Departments of Mathematics and Economics and Sociology in College of Liberal Arts.

†The brackets indicate the equivalent of the thirty hours of group electives required in the junior and senior years of the College of Liberal Arts. If subjects in the first two years, also characteristic of each of the four courses, are added, the sum is fifty hours for each group.

COLLEGE OF EDUCATION

FACULTY

FRANK E. THOMPSON, B.A.,
Secretary of the College of Education.

The Faculty of the College of Education consists of Professors and Instructors in the College of Liberal Arts whose work contributes to the various courses.

GENERAL STATEMENT

ORGANIZATION

A College of Education, to be a division of the College of Liberal Arts, was authorized by the Board of Regents in January, 1908. The report of the committee on a course of study was adopted in April, and the College was regularly opened for work in September of that year.

FUNCTION

It is intended that this College shall provide systematic and comprehensive training for those who may choose education as a *profession.* That there may be such a profession becomes every year more apparent, and it becomes apparent, too, that preparation for service in it must be as complete as for service in other professions. No human endeavor is more important than education; no class should be more carefully prepared than teachers. The need of the present time, expressed in most quarters in a demand, is that many of the teachers in the elementary schools, all of the teachers in the high schools, and all persons engaged in supervision of instruction shall have as a minimum of scholarship the B.A. degree, or its equivalent, and shall have made intensive study of the history, theory and practice of education. There is need, then, in each state for at least one professional school of collegiate rank which shall afford opportunity for training, both in theory and practice, for teaching, supervisory and administrative positions in elementary, secondary and normal schools.

The College of Education is designed to satisfy this need; it is a device of organization and administration to secure for the teacher studies along pertinent lines and in right proportions and sequence. The student looking toward teaching as a profession will be assisted and directed in the choice and prosecution of his work from the time of his matriculation until his graduation. He will not sacrifice anything of the culture of the Liberal Arts course, but through all the four years he will be growing toward efficiency and in professional spirit.

DESIGN OF CURRICULUM

The curriculum is designed to furnish to the prospective teacher who would be a leader in educational thought and thoroughly equipped for his work:

1. Courses calculated to give a broad acquaintance with knowledge and that culture rightly expected of the college graduate.
2. Courses in the subjects he expects to teach, of such character and so organized in sequence that when graduated he will be in some measure an authority in these subjects.
3. Courses that will give knowledge of:
   a. The constitution and needs of society.
   b. Child and adult natures and their possibilities for modification.
   c. The educational values of the various school subjects.
   d. The art of instruction—this knowledge to be both general and concrete and to come in large measure from actual practice in teaching.
   e. Educational history and its significance, both for the present and the future.

THE UNIVERSITY AND THE TRAINING OF TEACHERS

Inasmuch as education, in the professional sense, is service in an exceedingly complex field, the training required cannot be adequately given except in institutions of at least collegiate grade, nor in less time than that required for a college course. It is therefore peculiarly fitting that a College of Education should be organized in connection with, and largely out of the facilities of, the College of Liberal Arts in the University. Here are found the most complete equipment for securing the requisite scholarship, the best atmosphere for the development of scientific power and professional spirit, as well as the most highly selected students with whom to work.

College atmosphere gives a breadth of culture and has in it a suggestion of leadership which is to be found nowhere else. This has come to be so well recognized that for the high-school teacher in particular a college training is demanded in practically all sections. This was shown by the Report of the Committee of Fifteen, as early as 1895, later by the Standards for Accrediting of the North Central and other Associations of Colleges and Secondary Schools, and recently in an emphatic way in the joint recommendations of the Com-

mittee of Seventeen on the Professional Preparation of High-School Teachers. In addition to this minimum requirement for academic preparation the same associations are insisting upon both general and special pedagogical training of a standard given only in university departments.

From the standpoint of the University, the training of educators is one of its most important means of service. Regarding the essential services of a university to the commonwealth as the scientific investigation of the people's problems, the training of certain persons for the professions, the bringing out of leaders, and the setting of culture standards, it is at once apparent that there is no more logical channel, especially for state university endeavor, than this training of expert educators. Teaching is one of the community's most important activities, and a rapidly growing body, both lay and professional, is expecting the same effectiveness in results as is achieved in other fields. The university can make no mistake in training these leaders, and the student can make no mistake in taking such training.

ADMISSION AND ADVANCED STANDING

1. Regular Standing—The requirements for admission to regular standing in the College of Education are the same as for the College of Liberal Arts. See page 41.

2. Advanced Standing—Students from universities, colleges, technical and teachers' training schools, who have been admitted to such institutions from a full four-year high-school course, will be admitted to such advanced standing as may be agreed upon by a committee composed of the Dean of the College of Liberal Arts, the Secretary of the College of Education, and the heads of departments in which advanced standing is desired.

3. Irregular Standing—Persons who are 21 or more years of age and who give evidence of fitness to pursue particular studies may be admitted as special students without examination. Such special students may be graduated by fulfilling all requirements, both for admission and graduation.

COURSES OF STUDY LEADING TO THE DEGREE BACHELOR OF ARTS AND A BACHELOR'S DIPLOMA IN EDUCATION

The course of study of the College of Education covers a period of four years, 120 hours of credit being required for graduation. Graduates receive the degree of Bachelor of Arts and a Bachelor's Diploma in Education, which latter is a certificate of proficiency in the theory and art of education.

Attention is called to the following regulations:

1. All students must take fifty hours in some scheduled group; of these fifty hours they must take at least thirty in the junior and senior years.

2. A student may be allowed to substitute four hours of free electives for the required composition of the sophomore year, on recommendation of the head of the English Department, if he attains a satisfactory grade in the composition of the freshman year.

3. Students taking ten hours of either classics, mathematics, or science in the freshman year, must choose in the sophomore year five hours in one of the other groups named.

4. The selection of the major subject should be made and signified to the Secretary of the College of Education not later than the beginning of the sophomore year.

5. The general regulations of the College of Liberal Arts apply in the College of Education.

The course of study of the College of Education is distributed as follows:

English Language (may include 4 hours of free electives with the consent of the head of the Department of English).....10 hours
Classics and Mathematics, Mathematics and Science, or Science and Classics.....15 hours
History or Economics..... 6 hours
Psychology (General and Educational)..... 6 hours
History of Education ..... 6 hours
Principles of Education ..... 6 hours
Principles of Teaching ..... 2 hours
Practice Teaching ..... 4 hours
Philosophy or Sociology or additional Education or Psychology ..... 6 hours
Group Electives, Major and Minors (subjects the student expects to teach).....50 hours

PREFERRED SCHEDULE

FRESHMAN YEAR

1.	English Language	6
2.	Classics, Mathematics or Science	10
3.	History or Economics	6
4.	Group or Free Electives	8
		30

SOPHOMORE YEAR

5.	English (or Free Electives)	4
6.	Classics, Mathematics or Science	5
7.	a. Psychology	6
	b. History of Education	6
8-9.	Group or Free Electives	9
		30

JUNIOR YEAR

	Principles of Education	6
	Electives (In Education Group)	3-6
10.	Group Electives (Subjects Student Intends to Teach)	20-15
11.	Free Electives	6-3
		30

SENIOR YEAR

	Principles of Teaching	2
	Practical Teaching	4
	Electives (In Education Group)	0-3
12.	Group Electives (Subjects Student Intends to Teach)	20-15
13.	Free Electives	9-6
		30

GROUPS OF MAJORS AND MINORS

The purpose of the group elective requirement is to secure on the part of the teacher a thorough and systematic knowledge of the subject or subjects he proposes to teach. Usually the teacher in

the secondary school is required to teach two or more subjects. Hence it is desirable that he should have a careful and extensive preparation in one subject and sufficient preparation for teaching at least the elementary steps of two or three additional subjects. The following groups of majors and minors are uniform with those of the College of Liberal Arts:

I. DIVISION OF LETTERS

GROUP (a) *Major*, Latin; *Minors*, { Greek, European History.

GROUP (b) *Major*, Greek; *Minors*, { Latin, English Literature or Philosophy.

GROUP (c) *Major*, German; *Minors*, { History, Latin or French.

GROUP (d) *Major*, { Romance Languages; *Minors*, { Latin, German.

GROUP (e) *Major*, { Comparative and English Literature; *Minors*, { History, English Language.

GROUP (f) *Major*, { English Language; *Minors*, { English Literature. English History.

II. DIVISION OF SCIENCES

GROUP (g) *Major*, Mathematics; *Minors*, { Physics, Astronomy.

GROUP (h) *Major*, Chemistry; *Minors*, { Physics, Mathematics.

GROUP (i) *Major*, Physics; *Minors*, { Mathematics. Chemistry.

GROUP (j) *Major*, Botany; *Minors*, { Zoology, Chemistry.

GROUP (k) *Major*, Zoology; *Minors*, { Botany, Chemistry.

GROUP (l) *Major*, Geology; *Minors*, { Chemistry, Mineralogy.

GROUP (m) *Major*, Mineralogy; *Minors*, { Geology, Chemistry.

III. DIVISION OF PHILOSOPHY

GROUP (n) *Major*, Philosophy; *Minors*, { Psychology, Biology.

GROUP (o) *Major*, Psychology; *Minors*, { Philosophy, Biology.

GROUP (p) *Major*, Education; *Minors*, { Psychology, Biology.

IV. DIVISION OF HISTORY AND ECONOMICS

GROUP (q) *Major*, History; *Minors*, { Economics, Sociology.

GROUP (r) *Major*, Economics; *Minors*, { History, Sociology.

GROUP (s) *Major*, Sociology; *Minors*, { Biology, Psychology.

PRACTICE TEACHING

With the cooperation of the Board of Education of Boulder there has been worked out a very satisfactory scheme for the practice teaching. Certain classes in the elementary schools and in the high school are divided by the superintendent into sections, and one section of each such division is given into the charge of a student teacher who is under the immediate supervision of the regular class teacher, the school principal, and some one from the College of Education, and under the general supervision of the head of that institution. The section of the class taken by the student teacher is as a rule the smaller section and is composed of those who have had difficulty in getting on—of those who, except for this arrangement, would be likely to fail of passing. Each student in such a section is to some extent a subject for special study and treatment, hence the novice teacher's attention is forced at once where it properly should be: upon the problem of how children learn rather than upon how teachers teach.

Each such section is a problem, and a set of problems, to be solved by the persons mentioned working together. The student teacher observes the work of the regular class (in which his section frequently recites), sees what the ideal for the day's lesson is and, when he meets his section, does what he can to attain that ideal. In this attempt he is helped by the supervisors and makes rapid progress toward efficiency.

PRACTICE TEACHING FACILITIES

Practice teaching is done in the Boulder public schools, both elementary and secondary. The Principal of the Boulder High School is Instructor in Secondary Practice Teaching, and the Superintendent of Schools is Instructor in Elementary Practice Teaching. This arrangement in part insures the very cordial relations that obtain between the city school officials and the University. The practice teaching in both the high and elementary schools is done under most natural conditions. The high school is one of the largest and most efficient in the State, and the elementary schools are second to none. The apprentice teachers are getting their experience in real schools.

GRADUATE WORK

Graduates of the College of Education, or of institutions of a similar character, may continue the study of education in the Graduate School of the University as candidates for the degree of Master of Arts, and for the Master's Diploma in Education. One year of resident study is required. The candidate for the higher degree and the diploma in education is expected to devote one-half of his time to academic subjects and one-half to professional study in advance of the requirements for the Bachelor's degree, a part of which must demonstrate through practice teaching superior efficiency in instruction. The Master's Diploma in Education is an honor certificate, given only to those who, in addition to fulfilling, by resident work and a thesis, the requirements for the Master's Degree of the Graduate School of the University, give evidence of eminent educational ability and capacity for leadership.

COMMITTEE ON THE RECOMMENDATION OF TEACHERS

The College of Education, through the Committee on the Recommendation of Teachers, will make every effort to place its students and graduates in the positions for which their general education and professional preparation have fitted them. The committee maintains communication with Superintendents and Boards of Education with reference to vacancies, and invites correspondence from school authorities who are in need of professionally trained teachers. Students of the University, who intend to teach, and graduates of the University, who are now engaged in teaching and who wish to secure better positions should register with the committee.

STATE DIPLOMAS

The 17th General Assembly passed House Bill No. 423 in which Sections 4 and 7 provide as follows:

Sec. 4. The State Board of Education shall issue State diplomas upon application, without examination, to applicants who shall be graduates of colleges situated within the State of Colorado, which maintain a standard four-year course of collegiate work and require four standard years of high-school work or its equivalent, for admission, and who shall also exhibit evidence satisfactory to the State Board of Education of good moral character, and who shall also present evidence to the State Board of Education that they have twenty-four months of successful teaching experience, and who shall also produce evidence satisfactory to the State Board of Education, of professional training equivalent to at least one-sixth of a standard four-years' college course in at least three of the following groups of subjects, one of which shall be Practice Teaching, to-wit:

(1) General and Educational Psychology.
(2) History of Education.
(3) Science and Principles of Education.
(4) Practice Teaching and Special Methods.
(5) Organization and Management of Schools.
(6) Philosophy, Sociology and Anthropology.

Sec. 7. State diplomas, granted under the provisions of this act, shall license the holders thereof to teach in the public schools of any county, city, town, or district in the State without the necessity of any other examination for a period of five years, unless sooner revoked by the State Board of Education, and at the expiration of said time, the same may be renewed for a like period of five years in the discretion of the State Board of Education, and at the expiration of this time, the same may be renewed for life upon presentation to the State Board of Education of satisfactory evidence of professional growth and efficiency; *Provided*, That the State Board of Education shall issue upon application, without examination, to those persons who possess the qualifications set forth in Section 4 of this act, experience in teaching alone excepted, a temporary, non-renewable certificate to teach for five years in the public schools of Colorado.

SCHOOL OF SOCIAL AND HOME SERVICE

FACULTY

LAWRENCE W. COLE, Ph.D.,
Secretary of the School of Social and Home Service.

The Faculty of the School of Social and Home Service consists of Professors and Instructors in the College of Liberal Arts, School of Medicine, School of Pharmacy, and the Training School for Nurses, whose work contributes to the various courses.

REGULAR COURSES

FUNCTION

The course in The School of Social and Home Service is designed for three classes of students: (a) Those who expect to enter training schools for nurses; (b) those desiring to enter social-service activities, such as belong to the work of charitable and corrective institutions, social settlements, etc.; (c) those who wish a short course to prepare themselves for the management of the home.

DESIGN OF CURRICULUM

As will be seen from an examination of the course of study there are four main lines of work which the student pursues, viz.: (a) English, through the entire two years; (b) Science, as a foundation for a knowledge of health, represented by chemistry and the biological sciences, together with various applied subjects, such as Principles of Nursing, Principles of Surgery, Materia Medica, Clinical Laboratory Methods, Infant Hygiene; (c) Economics and Sociology, including Social Ethics; (d) Psychology.

The course is made up of subjects presented by members of the various faculties of the University. A detailed statement may be found in the announcements of the College of Liberal Arts, School of Medicine, School of Pharmacy, and the Training School for Nurses.

ADMISSION AND FEES

Entrance requirements and fees are the same as for students in the regular B.A. course. Students will present their high-school credentials to the Dean of the College of Liberal Arts.

See pages 41, 51.

RELATION TO THE REGULAR B. A. COURSE

Those who finish the entire course will receive 58 hours' credit toward the B.A. degree and can complete all the requirements for that degree by two years' additional work in properly selected college subjects.

CERTIFICATE

The course is so arranged that students will have preliminary training of considerable value even if obliged to drop the work at the close of the first year. A certificate showing the work done will be issued to students who complete either one or two years of the course.

COURSE OF STUDY

FIRST YEAR

FIRST SEMESTER		SECOND SEMESTER	
English	3	English	3
Chemistry	5	Chemistry	5
Sanitary Science	2	Sanitary Science	2
Anatomy and Physiology	3	Physiology (Laboratory)	3
Principles of Economics	3	Economic History of the United States	3
Principles of Nursing	2		
	18		16

SECOND YEAR

FIRST SEMESTER		SECOND SEMESTER	
English	2	English	2
Labor Problems	3	Problems in Sociology	2
Psychology (General)	3	Psychology (Education)	3
Accounting	3	Social Ethics	3
Bacteriology	4	Infant Hygiene	1
Infant Hygiene	1	Materia Medica	2
		Clinical Laboratory Methods	1
	16		14

PREPARATORY COURSE FOR NURSES

FUNCTION

In order to meet an increasing demand of hospitals for persons who have had systematic training in the sciences on which professional nursing depends a Preparatory Course for Nurses has been arranged. It is assumed that students who complete this course will enter a hospital training school for nurses.

ADMISSION AND FEES

Entrance requirements and fees are the same as for the College of Liberal Arts.

See pages 41, 51.

CREDITS

Credits for the courses completed will be issued at the close of each semester's work.

The State Board of Nurse Examiners has recommended this course of study and several hospitals have already agreed to give credit for the work done.

COURSE OF STUDY

FIRST SEMESTER		SECOND SEMESTER	
Anatomy and Physiology	3	Physiology (Laboratory)	3
Sanitary Science	2	Sanitary Science	2
*Principles of Nursing	2	Materia Medica	2
General Bacteriology	1	Economic History of the United States	3
Chemistry	5	Practical Bacteriology	2½
General Psychology	3	Educational Psychology or Social Ethics	3
	16		15½

*This course may be repeated the second semester if a sufficient number of students apply for it.

GRADUATE SCHOOL

*FACULTY

James H. Baker, M.A., LL.D. President.

J. Raymond Brackett, B.A., 1875, Bates; Ph.D., 1880, Yale. Professor of Comparative and English Literature; Dean.

Ira M. DeLong, B.A., 1878, M.A., 1881, Simpson College. Professor of Mathematics.

Fred B. R. Hellems, B.A., 1893, Toronto; Ph.D., 1898, Chicago. Professor of Latin.

Charles C. Ayer, B.A., 1889, Harvard; Ph.D., 1896, Strasburg. Professor of Romance Languages.

†George Norlin, B.A., 1893, Hastings College; Ph.D., 1899, Chicago. Professor of Greek.

Francis Ramaley, B.S., 1895, Ph.D., 1899, Minnesota. Professor of Biology.

Melanchthon F. Libby, B.A., 1890, Toronto; Ph.D., 1900, Clark. Professor of Philosophy.

William H. Pease, B.A., 1894, Toronto; LL.B., 1897, Colorado. Professor of Law.

John Bernard Ekeley, B.A., 1891, M.A., 1893, Colgate; Ph.D., 1902, University of Freiburg in Baden; Sc.D., 1911, Colgate. Professor of Chemistry.

Russell D. George, B.A., 1897, M.A., 1898, McMaster. Professor of Geology.

John D. Fleming, B.A., 1875, Central University; LL.B., 1879, Louisville; LL.D., 1910, Central University. Professor of Law.

Milo S. Ketchum, B.S., 1895, C.E., 1900, Illinois. Professor of Civil Engineering.

---

*This Faculty is made up of the Professors of the various Faculties of the University who offer work in the Graduate School.

†On leave of absence, 1912-1913.

HERBERT S. EVANS, B.S., 1898, E.E., 1900, Nebraska. Professor of Electrical Engineering.

JOHN A. HUNTER, B.S., 1890, M.E., 1896, Pennsylvania State College. Professor of Mechanical Engineering.

THEODORE D. A. COCKERELL. Professor of Zoology.

GEORGE M. CHADWICK. Professor of Music.

*JAMES F. WILLARD, B.S., 1898, Ph.D., 1902, Pennsylvania. Professor of History.

CARL C. ECKHARDT, B.Ph., 1902, Ohio State University; M.A., 1904, University of Michigan; Ph.D., 1908, Cornell University. Acting Professor of History.

OLIVER C. LESTER, B.A., 1897, Central College, Missouri; M.A., 1902, Ph.D., 1904, Yale. Professor of Physics.

FRANK E. THOMPSON, B.A., 1901, Stanford. Professor of Education.

JUNIUS HENDERSON, B.A., 1908, Colorado. Professor of Natural History and Curator of Museum.

JOHN S. MCLUCAS, B.A., 1893, South Carolina College; B.A., 1895, M.A., 1899, Harvard. Professor of English.

GRACE FLEMING VAN SWERINGEN, B.L., 1893, Cornell; Ph.D., 1904, University of Berlin. Professor of Germanic Languages.

CLOUGH T. BURNETT, M.D., 1908, Michigan. Professor of Bacteriology.

MILO G. DERHAM, B.A., 1892, Cornell; Ph.D., 1904, Colorado. Professor of Latin.

SAUL EPSTEEN, B.S., 1900, California; Ph.D., 1901, University of Zurich. Professor of Engineering Mathematics; Secretary.

LAWRENCE W. COLE, B.A., 1899, Oklahoma; M.A., 1904, Ph.D., 1910, Harvard. Professor of Psychology.

JAMES C. TODD, B.Ph., 1897, Wooster; M.D., 1900, Pennsylvania. Professor of Pathology.

---

*On leave of absence, 1912-1913.

Frederick A. Bushee, B.L., 1894, Dartmouth; M.A., 1898, Ph.D., 1902, Harvard. Professor of Economics and Sociology.

Ralph D. Crawford, B.A., 1905, M.A., 1907, Colorado. Assistant Professor of Geology.

David R. Jenkins, B.S. (E.E.), 1904, E.E., 1907, Colorado. Assistant Professor of Electrical Engineering.

Clement C. Williams, B.S. (C.E.), 1907, Illinois; C.E., 1909, Colorado. Assistant Professor of Civil Engineering.

S. Antoinette Bigelow, B.A., 1893, Wellesley; M.A., 1910, Columbia. Assistant Professor of Literature.

Harry A. Curtis, B.S. (Ch.E.), 1908, M.A., 1910, Colorado. Assistant Professor of Chemistry.

GRADUATE COMMITTEE

J. Raymond Brackett, Dean.
Francis Ramaley.
Saul Epsteen, Secretary.
Frederick A. Bushee.

GENERAL STATEMENT

ANNOUNCEMENT

The University of Colorado offers graduate instruction to those who desire a more liberal education than is afforded by the college or professional course, to those who wish to prepare for the larger duties of citizenship, and to those who wish to become investigators in a special subject. The call in all higher intellectual fields is for a preparation considerably more advanced than the college course. The graduate school of the modern university is the place of professional training for philosophy, languages, literature, science, and the public service; systematic graduate study is invaluable to writers, journalists, teachers, economists, legislators, and special investigators in science and philosophy.

The University of Colorado offers to graduates of colleges and universities the use of its fine library, new laboratories, and advanced courses of study.

Graduate students who meet the requirements for higher degrees, receive personal sympathy in arranging their work, and aid toward securing a start in their chosen career.

ADMISSION

Graduates from any college or scientific school of good standing are admitted upon presentation of diploma and certificate of good character.

Upon entrance, the student confers with the Dean of the Graduate School regarding the selection of a chief subject of study; the minors are elected on consultation with the professor in charge of the major; one minor of at least six hours must be completed in a different department from the major.

Candidates for the degree Doctor of Philosophy must have a reading knowledge of both French and German. Candidates for the degree Master of Arts must have a reading knowledge of French or German, but the professor in charge of the major subject may require both French and German.

GRADUATE COMMITTEE

The Graduate Committee consists of the Dean of the Graduate School, the Secretary, and two other professors. The Dean and the

Graduate Committee supervise the election of studies, and, after receiving reports from the professors giving instruction, recommend candidates to the Graduate faculty for degrees.

RESIDENCE

The University of Colorado does not grant credit for work done *in absentia;* but this rule does not apply to graduates of this Institution who are candidates for the degree of Engineer. For a year to count as residence, a student should be located at the University and give his undivided attention to academic work, completing not less than thirty hours.

ADVANCED STANDING

Credit is given for work done in other universities, but at least one full year of residence at the University is required for each higher degree.

RECORD OF SCHOLARSHIP

A book is issued to each graduate student in which the Dean enters the courses he is to take. At the end of each semester the student submits his book to each instructor for signature; then to the Dean for record. On leaving the Institution the book becomes his personal property, and is a sufficient evidence of the scope and character of his work.

FEES

For fees, see page 52.

INSTRUCTORSHIPS

Students making special investigations have opportunities to study the teaching of the subjects they pursue, and, if they show special ability, may become candidates for instructorships.

CANDIDATES FOR A DEGREE

Master of Arts—A graduate student wishing to become a candidate for the degree Master of Arts should make special application as soon as possible after matriculation.

Doctor of Philosophy—A student entering the University for the first time should work some months, that his ability may be known, before applying for enrollment as a candidate for the degree Doctor of Philosophy.

Applications for candidacy should include a programme of studies leading to the degree, a list of undergraduate work in the same lines, a statement of any original work already accomplished, and an enumeration of honors and degrees.

REQUIREMENTS FOR DEGREES

Candidates for the degree Master of Arts or Doctor of Philosophy must present credits for at least one year's residence at this University, and evidence of having completed a course of study approved by the Dean and Graduate Committee.

MASTER OF ARTS —The work required is one full year. Six copies of the Master's thesis or dissertation, printed or typewritten and bound, are to placed in the University library.

DOCTOR OF PHILOSOPHY—The work required is three years of residence, which shall include as a minimum, five semesters of twelve hours each and a thesis. The first two years may be spent at other universities in actual residence; or the first two years may be done here and the third spent in the preparation of a thesis at some approved university.

The thesis for the Doctor's degree must show power in original investigation; it is printed and from fifty to one hundred copies placed in the University library for the use of the University.

Students applying credits from other universities should bring letters from their instructors showing quality and amount of work. The final examination covers all subjects presented for the degree, whether done here or elsewhere.

The following degrees are offered to students specially prepared in Engineering:

MASTER OF SCIENCE—A candidate for the degree Master of Science must have previously received the degree B.S. in Engineering from this University; or if graduated elsewhere, he must satisfy the Faculty that he possesses equivalent attainments. He must choose a major subject to occupy one-half his time from the graduate courses offered in the line in which he received his Bachelor's degree. Study and residence for not less than one year and a thesis

on an approved subject are required. A year's work includes thirty hours, of which not less than six hours should be given to the thesis.

Civil Engineer, Electrical Engineer, Mechanical Engineer—The degree of Engineer may be conferred upon a Bachelor of Science of this University who has taken the B.S. degree in the course for which he is a candidate for the higher degree, if he furnish satisfactory evidence that he has pursued further technical studies for at least one year, has presented a satisfactory thesis on an approved engineering topic, and in addition has been employed in professional work in positions of responsibility for at least another year. If the candidate does not reside at the University, his course of study must be approved in advance by the professor in charge of the department; and he must prepare an approved thesis on some engineering topic to be presented together with a detailed account of his professional work, at least one month before the annual commencement at which he expects to take his degree. Candidates must be registered for two years in advance of the commencement at which the degree is to be conferred.

Graduates of other institutions must complete one year of work and residence in this University.

INSTRUCTION

Students admitted to the Graduate School may pursue any course in the College of Liberal Arts, College of Engineering and professional schools for which they are qualified.

The Graduate Faculty does not put hindrances in the way of mature students; almost any reasonable programme of study will be approved if it forms a consistent plan of work or is to be pursued with some definite aim.

But courses will be counted towards a degree only when recommended for that purpose by the professors in charge of such courses.

The courses of study offered especially to graduate students may be grouped as follows:

I. Greek Language and Literature.
II. Latin Language and Literature.
III. Germanic Languages and Literatures.
IV. Romance Languages and Literatures.
V. Literature (in English).
VI. English Language.
VII. Mathematics.
VIII. Civil Engineering.
IX. Electrical Engineering.
X. Mechanical Engineering.
XI. Physics.
XII. Chemistry.
XIII. Biology.
XIV. Geology.
XV. Philosophy.
XVI. Psychology.
XVII. Education.
XVIII. History.
XIX. Law.
XX. Social Science.
XXI. Music.

*DESCRIPTION OF COURSES

I. GREEK LANGUAGE AND LITERATURE

Professor Norlin :—

11. The Greek Pastoral.
With special study of Theocritus.

12. Plato.
Interpretation of the Republic.

13. Thucydides.

14. Lyric Poets, Including Pindar and Bacchylides.

15. Greek Tragic Poets.

For Graduates Only.

22. Aristotle's Politics and Constitution of Athens.

23. History of Greek Comedy.

24. Introduction to Greek Epigraphy.

25. Study of Greek Dialects from Inscriptions.

26. Seminar in Poets of Alexandrian Period.

27. Seminar in Early Greek Philosophy.

28. Seminar in Greek Mythology and Religion.

II. LATIN LANGUAGE AND LITERATURE

Professors Hellems and Derham :—

16. Lucretius.

19. Martial.

22. Suetonius.

24. Advanced Latin Prose.

25. Greek and Roman Archæology.

For Graduates Only.

26. Roman Law.

(1) Gaii Institutiones Juris Civilis. 3 h.

(2) Elements of Roman Law. 2 h.

*The graduate courses, which may be elected by undergraduates also, are listed under the same numbers as in the College of Liberal Arts. The courses for graduates only are described here.

27. Roman Administration. 3 h.
The development of Roman public institutions in their historical sequence.

28. Roman Topography. 2 h.
The topography of Rome in the historical development of the city.

29. Interpretation of Early Latin. 2 h.
Selected examples of Early Latin.

30. Epigraphy. 2 h.
Cagnat's Cours d'Epigraphie Latine; Egbert's Introduction; handling of the Corpus Inscriptionum Latinarum.

31. Latin Morphology. 2 h.
The subject will be approached from the comparative side.

32. Latin Syntax. 2 h.
The subject will be treated comparatively.

33. Latin Palæography. 2 h.
An introduction to the subject.

34. Seminar on Domitian.
A study of the sources for the life and reign of Domitian; particular stress will be laid on the epigraphical side.

35. Tacitus. 2 h.
A rapid reading course in the Annals with a consideration of the historical problems raised.

36. Persius. 2 h.
Interpretation of the text; Stoicism in the early Empire.

37. Roman Provincial Administration.
Pliny, Letters, book X; selections from Cicero's correspondence.

III. GERMANIC LANGUAGES AND LITERATURES

Professor van Sweringen and Mr. Baur:—

GERMAN.

8. The German Drama of the Nineteenth Century.

11. Gœthe's Faust.

For Graduates Only.

16. The History of German Literature from the Earliest Times to the Time of Klopstock. First semester. 3 h.
Lectures; collateral reading; papers.

17. The History of German Literature from the Time of Klopstock to the Present. Second semester. 3 h.
Lectures; collateral reading; papers.

18. Old High German. Two semesters. 3 h.
Braune's Althochdeutsche Grammatik, and Althochdeutsches Lesebuch.

19. Middle High German. Two semesters. 2 h.
Paul's Mittelhochdeutsche Grammatik; reading of Hartman von der Aue's Der Arme Heinrich.

20. Germanic Hero-Sagas. One semester. 3 h.
Lectures; recitations; collateral reading.

21. Germanic Mythology. One semester. 3 h.
Lectures; recitations; collateral reading.
Primitive Germanic religion, customs and ideals of life, in their relation to German literature.

GOTHIC.

For Graduates Only.

22. Gothic. One semester. 3 h.
Phonology and inflections of Gothic; relation of Gothic to German and English; reading of extracts in Braune's Gotische Grammatik.

23. Deutsche Phonetik und Aussprache.

SCANDINAVIAN.

For Graduates Only.

24. Old Icelandic. Two semesters. 3 h.
Phonology and inflection of Old Icelandic, from Noreen's Altisländische and Altnorwegische Grammatik.
Reading of Heusler's Zwei Isländer-Geschichten.

25. The Edda. Both semesters. 3 h.
Gering's Edition of Hilderbrand's Edda Lieder.

IV. ROMANCE LANGUAGES AND LITERATURES

Professor Ayer:—

FRENCH.

7-8. History of French Literature.

For Graduates Only.

9. Old French Grammar and Comparative Romance Philology. 2 h.

10. Reading of Old French Texts. 2 h.
Bartsch's Chrestomathie de l'Ancien Francais.

11. Comparative Romance Syntax, on Basis of French. 2. h.

12. Critical Study of French Literature Based on St. Beuve. 2 h.

SPANISH.

6. Lope de Vega and Calderon.

7. Advanced Prose Composition.

For Graduates Only.

8. Introduction to Old Spanish.
Lectures and seminar exercises.
Comparative Romance Philology, with special reference to Spanish; Keller's Altspanishches Lesebuch; El Poema del Cid.

ITALIAN.

3. The Life and Works of Dante.

4. Petrarch and Boccacio.

For Graduates Only.

5. Introduction to Old Italian.
Lectures and seminar exercises.
Comparative Romance Philology, with special reference to Italian. Monaci's Crestomazia Italiana dei primi secoli.

V. COMPARATIVE AND ENGLISH LITERATURE

Professor Brackett, Dean Bigelow, Miss Field, and Mr. Salomon:—

4. Art-Form.

6. Shakespeare.

7. The Great Drama.
11. Tennyson.
15. Comparative Literature.
16. The Epic.
17. World Drama.
18. The Short Story.
19. Masterpieces of Fiction from the Earliest Times.

For Graduates Only.

20. The History of English Literature.
Study of selected periods; the Elizabethan period; the age of Milton; the nineteenth century; contemporary authors.

21. Studies in Victorian Literature and Art. Throughout the year. 5 h. 1908.
Ruskin and Turner; the Pre-Raphaelite Movement; the Rossettis; Burne-Jones; Holman-Hunt; George Frederick Watts; William Morris; Walter Crane.

22. The Predecessors of Shakespeare. 5 h. 1904.

23. The Renaissance in Europe. 5 h. 1909.

24. Romanticism.

25. The Teaching of Literature. 1911.

26. The History of English Prosody. 1911.
Saintsbury, three volumes.

27. The History of Criticism. 1912.
Saintsbury, three volumes.

28. The Rhythms of English Prose.
Saintsbury.

VI. ENGLISH LANGUAGE

Professor McLucas:—

8-9. Anglo-Saxon.

10. Middle English.

11. Chaucer.

12-13. Shakespeare.

14. Pre-Shakespearean Drama.

VII. MATHEMATICS

PROFESSORS DELONG AND EPSTEEN, AND MISS COOPER:—

9 AND 12. DIFFERENTIAL CALCULUS.
10 AND 13. INTEGRAL CALCULUS.
11. MODERN GEOMETRY.
14. DIFFERENTIAL EQUATIONS.
15. SOLID ANALYTIC GEOMETRY.
17. THEORY OF FUNCTIONS.

*For Graduates Only.

EITHER SEMESTER.

21. AN ADVANCED COURSE IN TRIGONOMETRY, ANALYTIC GEOMETRY, OR THE CALCULUS.

22. LINEAR ALGEBRA.

23. CONTINUOUS GROUPS.
Prerequisite: courses 13 and 14.

24. APPLIED HIGHER MATHEMATICS.
Prerequisite: courses 14 and 15.

25. SEMINAR.

VIII. CIVIL ENGINEERING

PROFESSOR KETCHUM AND ASSISTANT PROFESSOR WILLIAMS:—

For Graduates Only.

101. RAILWAY LOCATION AND CONSTRUCTION.
102. YARDS AND TERMINALS.
103. SIGNAL ENGINEERING.
104. RAILWAY OPERATION, MANAGEMENT, AND VALUATION.
105. TUNNELS AND CANALS.
110. ADVANCED BRIDGE DESIGN.
111. SWING AND MOVABLE BRIDGES.
112. METALLIC ARCHES.
113. INDETERMINATE STRUCTURES.
114. STEEL OFFICE BUILDING CONSTRUCTION.
115. STEEL MINE AND MILL STRUCTURES.
120. REINFORCED CONCRETE CONSTRUCTION.
130. GENERAL WATER WORKS CONSTRUCTION AND MANAGEMENT.

*Not more than two courses will be offered in any one semester.

131. Tanks, Standpipes and Reservoirs.
140. Sewage Purification and Disposal Works.
141. General Sewerage Design and Construction.
150. Irrigation Engineering Structures.
151. Irrigation Engineering Studies.
152. Dams and Reservoirs for Irrigation.
160. Hydraulics.
161. Advanced Applied Mechanics.

IX. ELECTRICAL ENGINEERING

Professor Evans and Assistant Professor Jenkins:—

For Graduates Only.

101. Theory of Alternating Currents.
102. Analysis and Design of Alternating Current Apparatus.
103. Analysis and Design of Direct Current Apparatus.
104. Switchboard Design and Construction.
105. The Testing of Electrical Machinery.
106. Electrical Engineering Research.
107. Telephones and Telegraph.
108. Electrical Transmission of Power.
109. Electric Light and Power Plants.
110. Electro-Metallurgical Industries.
111. Advanced Electrical Engineering Laboratory.

X. MECHANICAL ENGINEERING

Professor Hunter:—

For Graduates Only.

101. Advanced Machine Design.
102. Graphics and Kinematics.
103. Advanced Steam Engineering.
104. Experimental Engineering.
105. Pneumatics.
106. Railway Mechanical Engineering.
107. Mechanical Refrigeration.

XI. PHYSICS

Professor Lester, Mr. Brackett, and Mr. Finney:—

7. Theoretical Mechanics—Statics.
8. Theoretical Mechanics—Dynamics.

9. Theory of Electricity and Magnetism.

10. Electrical Measurements.
Prerequisite: Physics 1-2, 3-4, and calculus.

11. Theory of Electricity—Alternating Currents.

12-13. Introduction to Theoretical Physics.
Prerequisite: Physics 1-2, 7-8, and calculus.

14-15. Advanced Experimental Physics.
Prerequisite: Physics 1-2, 3-4, and calculus; also to be taken with or to follow 12-13.

17. Heat and Thermodynamics.

18. Light.

21. Introduction to Theoretical Astronomy.

For Graduates Only.

23. Vector Analysis. Throughout the year. 3 h.
A study of the system of Vector Analysis developed by Gibbs, with applications to problems of mathematical physics.
Prerequisite: Physics 7, 8, 11-12, or their equivalent, and calculus.

24. The Theory of Electrons. Second semester. 3 h.
A course of lectures and parallel reading dealing with the evidence which has led to the idea of the electron and to the atomic structure of electricity. The discharge of electricity through gases, radioactivity, the corpuscular theory of matter, and the bearing of the electron theory on the explanation of various other physical phenomena are also considered.
Prerequisite: Physics 1-2, 8, 9, and calculus.

Note—In place of some of the above courses graduate students with the requisite preparation may arrange for more advanced courses in the same subjects or for special courses. Such subjects as radioactivity, electric waves and wireless telegraphy, and selected portions of advanced mathematical physics may be given when there is sufficient demand.

XII. CHEMISTRY

Professor Ekeley, Assistant Professor Curtis, Mr. Dean, Mr. Poe, and Mr. Rohwer:—

3-4. Qualitative Analysis.

5a and 5b. Quantitative Analysis.
Gravimetric.
6a and 6b. Quantitative Analysis.
Volumetric.
7. Analysis of Iron and Steel.
8. Sanitary Water Analysis.
9. Mineral Water Analysis.
10. Ore Analysis.
11. Gas Analysis.
12. Organic Chemistry.
Lectures.
14. Organic Laboratory Preparations.
15. Ultimate Analysis of Organic Compounds.
16. Food Analysis.
17. Physical Chemistry.
Lectures.
18. Physico-Chemical Laboratory Methods.
19. Electrochemistry.
Lectures.
20. Electrochemical Analysis.
21. Laboratory Practice in Electrochemistry.
22. Physiological Chemistry.
Lectures.
23. Physiological Chemistry.
Laboratory.
24. Industrial Chemistry.
25. Drug Assaying.

Note—Candidates for the Master's degree, taking chemistry as a major, must have completed courses 1, 2, 3, 4, 5a, 5b, 6a, 6b, 10, 12, 14, 17, 18, 19, and 21. Courses from Course 6 on may be counted toward the thirty-hour requirement, in case they have not already been counted toward the bachelor's degree; in such cases special courses in chemistry may be arranged for.

XIII. BIOLOGY

BOTANY.

Professor Ramaley:—

For Graduates Only.

11. Special Problems.
Plant Anatomy, Ecology, Algology.

Research work in ecology is provided at the Summer Mountain Laboratory at Tolland, Colorado. Prospective students should consult the Summer School announcement and communicate with Professor Ramaley, the professor in charge.

ZOOLOGY.

PROFESSOR COCKERELL AND DR. ELLIS:—

For Graduates Only.

17. EMBRYOLOGY AND HISTOLOGY OF VERTEBRATES.
18. SPECIAL PROBLEMS.

Paleo-entomology, Ichthyology, Taxonomy of Hymenoptera, Coccidae (scale insects), and others as opportunity offers.

XIV. GEOLOGY AND MINERALOGY

PROFESSORS GEORGE AND HENDERSON, AND ASSISTANT PROFESSOR CRAWFORD:—

I. GEOLOGY AND PHYSIOGRAPHY.

7.8 ECONOMIC GEOLOGY.
9-10. ADVANCED GEOLOGY.
11-12. GEOLOGY OF COLORADO.
13-14. ADVANCED FIELD GEOLOGY.
15. ADVANCED PHYSIOGRAPHY.
16. GEOLOGY CULTURE COURSE.
17-18. PALEONTOLOGY.

For Graduates Only.

19-20. RESEARCH GEOLOGY. One or both semesters.

The work will be chiefly individual, and will depend largely on the preparation of the student. The vicinity of Boulder, and the state as a whole, offer a wide range of problems for research. The credit allowed will depend upon the time given to the work and the character of the results obtained.

Prerequisite: previous training equivalent to courses 1-2, 7-8, 9-10, 13-14, and Mineralogy 5-6 and 3-4. Mineralogy 9-10 is strongly recommended. One or more of these courses may be taken with the research work.

NOTE—The establishment of the State Geological Survey gives very exceptional opportunities to a limited number of advanced students in geology.

II. MINERALOGY AND PETROLOGY.

5-6. Advanced Mineralogy.
8. Geological Materials for Industrial Chemistry.
9-10. Petrography.

For Graduates Only.

11-12. Quantitative Mineralogy. Both semesters.

Advanced students of geology and mineralogy who are doing independent field work and who have had sufficient training in analytic chemistry will be provided laboratory equipment for the necessary analytic work in connection with the preparation of reports and theses.

XV. PHILOSOPHY

Professor Libby:—

All undergraduate courses are open to candidates for higher degrees. The *thesis-subject* may be chosen from any branch of Philosophy.

For M.A.

For *major*, undergraduate courses, and advanced readings in sources of Philosophy, and in Metaphysics; for *minor*, a thorough knowledge of the history of Philosophy only.

For Ph.D.

For major, courses for M.A. major, with further advances in history of Philosophy and in special disciplines. Candidate must be able to read German and French at sight. For minor, advanced history of Philosophy only, including special knowledge of two philosophers.

XVI. PSYCHOLOGY

Professors Cole and Thompson:—

2. Comparative Psychology.
3. Advanced Psychology.
4. Pathological Psychology.
5-6. Experimental Psychology.
8. Social Psychology. (Education 15.)
9. Child Study.
10. Anatomy of the Central Nervous System.

For Graduates Only.

11. Advanced Experimental Psychology.
Students in this course will be expected to carry on systematic investigations in special problems.

XVII. EDUCATION

Professors Thompson, Cole and Libby:—

9. History of Ancient and Mediæval Education.
10. History of Modern Education.
11-12. Comparative Study of School Systems.
13. General Anthropology.
14. General Ethnology.
15. Social Psychology (Psychology 8).
16. Education and Society.
17. Advanced Practice Teaching.
18. Practicum in Education.

XVIII. HISTORY

Professor Willard*, Dr. Eckhardt, Mr. McFayden, and Mr. Fox:—

7. The History of Greece.
8. The History of Rome.
10. German History from the Beginnings to the Present Time.
11. Modern England.
12. Historical Method and Bibliography.
13. The American Colonies.
14. The History of the West.
15. The History and Literature of the Hebrews to 300 B. C.
16. The History and Literature of the Jews, 300 B. C. to 135 A. D.
17. The Mediæval Church and the Reformation.
18. English Social and Industrial History.
19. The United States. 1787-1803.
20. The Near Eastern Question.
21. Modern Internationalism.
22. Renaissance.

For Graduates Only.

23. England in the Fourteenth Century. Throughout the year. 2 h.

---

*On leave of absence, 1912-1913.

A seminar course on the social, economic, and political history of England during the fourteenth century; intended to teach methods of research in European history to those who desire to specialize in that subject.

XIX. LAW

Professor Fleming:—

Constitutional Law. 4 h.
Sales of Personal Property. 4 h.
Irrigation. 3 h.
Mining Law. 3 h.

Professor Reed:—

Bills and Notes. 5 h.
Private and Municipal Corporations. 5 h.
Domestic Relations. 3 h.

Professor Pease:—

Real Property. 5 h.
Law of Contracts. 5 h.

Mr. Folsom:—

Bailments and Carriers. 2 h.

XX. SOCIAL SCIENCE

Professor Bushee, Mr. Stehman, and Mr. Bethke:—

I. ECONOMICS.

4. Advertising.
5. Theory and Application of Statistics.
6. Economic and Commercial Geography.
7. History of Commerce.
8. Labor Problems.
9. Money and Banking.
10. Transportation.
11. Corporation Finance.
12. Taxation.
13. Theory of Investments (Life Insurance, etc.).
14. Theory and Practice of Accounting.
15. Great Industries.
16. Business Organization and Scientific Management.

For Graduates Only.

17. History and Criticism of Economic Theories. First semester. 12:00. 2 h.
Lectures, reading, reports.
The lectures will deal with the economic ideas of Plato and Aristotle; the influence of the Roman Law; the Canonists; Mercantilists; Physiocrats; Adam Smith; Ricardo; Malthus; John Stuart Mill; the Historical School; Jevons and the Austrian School. The aim is not only to study the content of economic theory, but also to exhibit theory in the light of political and social conditions.
18. Seminar in Economics and Sociology. Throughout the year. 2 h.

II. SOCIOLOGY.

1. Principles of Sociology.
2. Problems in Sociology.
3. Socialism.

For Graduates Only.

4. Seminar in Economics and Sociology. Throughout the year. 2 h.

III. Political Science.

1. National Administration.
2. State and Local Government.
3. Comparative European Government.
4. Municipal Government.
5. Political Parties and Party Problems.
6. Consular and Diplomatic Service.
7. International Law.
8. Municipal Ownership and Other City Problems.

XXI. MUSIC

Professor Chadwick:—

4. Canon and Fugue.
5. Composition and Orchestration.
6. History of Music.
7. Æsthetics and Philosophy of Music.

COLLEGE OF ENGINEERING

FACULTY

James H. Baker, M.A., LL.D., President.

Milo S. Ketchum, C.E., Dean, Professor of Civil Engineering.

Herbert S. Evans, E.E., Professor of Electrical Engineering.

John A. Hunter, M.E., Professor of Mechanical Engineering.

Saul Epsteen, Ph.D., Professor of Engineering Mathematics.

Charles C. Ayer, Ph.D., Professor of Romance Languages.

John Bernard Ekeley, Ph.D., Sc.D., Professor of Chemistry.

Russell D. George, M.A., Professor of Geology.

Oliver C. Lester, Ph.D., Professor of Physics.

John S. McLucas, M.A., Professor of English.

Grace Fleming van Sweringen, Ph.D., Professor of Germanic Languages.

Clough T. Burnett, M.D., Professor of Bacteriology.

Frederick A. Bushee, Ph.D., Professor of Economics and Sociology.

David R. Jenkins, E.E., Assistant Professor of Electrical Engineering.

Clement C. Williams, C.E., Assistant Professor of Civil Engineering.

Harry A. Curtis, B.S. (Ch.E.), M.A., Assistant Professor of Chemistry.

Guy W. Smith, B.S. (E.E.), M.S., Instructor in Engineering Mathematics.

Harland C. Woods, C.E., Instructor in Engineering Drawing.

Whitney C. Huntington, C.E., Instructor in Civil Engineering.

Carl M. Duff, B.S. (C.E.), M.S., Instructor in Engineering Mathematics.

Frank S. Bauer, B.S. (M.E.), Instructor in Mechanical Engineering.

Herbert D. McCaslin, B.S. (M.E.), Instructor in Mechanical Engineering.

Frank L. Brown, B.S. (C.E.), Instructor in Civil Engineering.

Lynn R. Leonard, B.S. (E.E.), Instructor in Electrical Engineering.

Charles G. Martinson, B.A., B.S. (M.E.), Instructor in Mechanical Engineering.

Ivan C. Crawford, B.S. (C.E.), Instructor in Civil Engineering.

Oscar Dahlene, B.S. (M.E.), Instructor in Mechanical Engineering.

William R. Brackett, B.A., Instructor in Physics.

Ruth M. Shelledy, M.A., Instructor in Engineering German.

John H. V. Finney, B.S. (E.E.), Instructor in Physics.

Jessie Hutsinpillar, M.A., Instructor in Engineering English.

Walter F. Mallory, Assistant in Mechanical Engineering.

Clarence J. Diehl, Assistant in Engineering Drawing.

Harry D. McKinney, Assistant in Engineering Drawing.

Ida M. Johnson, B.A., Assistant in Romance Languages.

AINSWORTH ELECTRICAL STANDARDIZING LABORATORY.

Herbert S. Evans, E.E., Director.

Alfred W. Ainsworth, Research Assistant in Electrical Engineering.

STAFF OF THE U. S. GOVERNMENT TIMBER-TESTING STATION.

Norman De W. Betts, M.E., Engineer in Forest Products.

Harry M. Mason, Jr., M.E., Engineer in Wood Preservation.

Cornelius Barry, Laboratory Assistant.

GENERAL STATEMENT

PURPOSE

In accordance with the provisions of the Charter of the University, a School of Applied Science was authorized by the Board of Regents, and established in 1893. The name of the Department was changed to the College of Engineering, September, 1906.

It is the object of the College to provide thorough technological education of the highest grade. To this end there is combined with a broad theoretical training a very considerable amount of practical work in the shops and laboratories, supplemented by visits to large manufacturing establishments and power installations.

Regular courses of study, extending over four years, are offered in Civil, Electrical, Mechanical, and Chemical Engineering.

The work of the first two years of all courses, with a few minor exceptions, is the same. It is aimed in these years to lay a broad foundation for the more specialized work of the last two years. To this end the work is largely theoretical in character, and comprises courses in mathematics, general chemistry and physics, mechanical drawing, languages, and the elements of engineering subjects. Class room and lecture work is supplemented wherever practicable by laboratory courses.

In the last two years the work is more specialized, and the fourth year is almost entirely devoted to technical work in the several branches of Engineering.

REQUIREMENTS FOR ADMISSION

See page 42.

ADMISSION TO ADVANCED STANDING

Students from other institutions will be admitted to any class not later than the first term of the senior year on passing examinations in the subjects given in the preceding years in the College of Engineering, or on presentation of satisfactory certificates, showing that the required work has been done in other technical schools. A certificate of honorable dismissal will also be required.

Graduates from other colleges will be admitted without examination, and allowed to pursue such courses as their previous work will permit.

By proper election of subjects in the collegiate course, such as sciences, mathematics, and languages, a graduate of the arts de-

partment can obtain his engineering degree in two years. Such a course affords a very broad general training, and is to be highly recommended.

DEGREES

Upon the satisfactory completion of the prescribed and elective work in any course, the degree, Bachelor of Science in the course pursued, will be conferred.

As a prerequisite to graduation, each student is required to present a satisfactory thesis on a subject requiring original research work along technical lines, or an extended study of some engineering problem or appliance.

The degree of Master of Science (M.S.) is given upon completion of one year's graduate work in residence after having obtained the degree of Bachelor of Science in Engineering. The year's work requires thirty (30) semester hours' credit, of which at least six (6) hours shall be devoted to a thesis.

The degree of Civil Engineer (C.E.), Electrical Engineer (E.E.), or Mechanical Engineer (M.E.), is given for one year's academic work (30 semester hours' credit in technical subjects, not less than two-thirds of which must be in the same line as the candidate's undergraduate work), and a thesis, after the candidate has had at least one year's responsible charge of engineering work. The academic work for graduates of this Institution need not be done in residence. A candidate must be registered for at least two years before coming up for the degree of Engineer.

For further details of graduate work see the Graduate School.

EQUIPMENT

BUILDINGS.

The College of Engineering occupies the Engineering Building and the Engineering Shops situated at the eastern end of the quadrangle. The buildings are well planned for engineering instruction and are devoted entirely to the technical work of the college.

ENGINEERING BUILDING—The basement contains the applied mechanics, timber testing, hydraulic, road materials testing, and cement laboratories.

On the first floor are located the electrical and mechanical engineering laboratories, senior electrical and mechanical engineering drawing rooms, and class rooms.

The second floor is devoted to drawing and instrument rooms for the civil engineering department, general class rooms and the reading room.

The laboratories, class rooms, and drawing rooms are commodious and well lighted.

All buildings on the campus are heated and lighted from a central power plant.

Engineering Shops—The Shops Building consists of a one-story section containing a foundry forty by forty feet, a forge shop forty by forty feet, and a machine shop forty by eighty feet; and a two-story section containing a wood-bench shop forty by forty feet, and a wood-turning shop forty by forty feet on the first floor, and a freshman drawing room forty by eighty feet on the second floor. The one-story section is lighted by means of a modified saw-tooth roof.

CIVIL ENGINEERING EQUIPMENT.

The Department of Civil Engineering possesses an extensive equipment of surveying instruments of the various standard makes, consisting of engineer's transits, solar attachments, mining transits, compasses, engineer's levels, solar compasses, plane tables, a sextant, barometers, chains and tapes, as well as smaller instruments. For use in surveying field work the department has a 100-foot standard of length, and a triangulation system with permanent monuments and a meridian and base line.

The department has two bridge extensometers, manufactured by the Wissler Instrument Works, together with other necessary equipment for the determination of stresses in bridge trusses due to static and moving loads.

Standard apparatus for determining color, turbidity, and other physical properties of water has been added to the facilities for instruction in sanitary engineering.

The department also possesses an ample collection of drawings, blue prints, and photographs for use in design. Among the most valuable collections of plans for students' use are a set of detail plans of the A. T. & S. F. R. R. standard plate girder and truss bridges, donated by Mr. A. F. Robinson; and numerous detail plans of structures donated by the American Bridge Company. Blue print frames, an excellent selection of steel T squares, straight edges and protractors, planimeters, scales, slide rules, and other special draw-

ing tools are available to the student for the courses which involve drafting.

The department has a Bausch and Lomb projection lantern equipped for both slides and opaque objects, and has a large supply of slides and photographs.

Cement Laboratory.

The Cement Laboratory is equipped with a two thousand pound Fairbanks shot machine, a two thousand pound Riehle cement machine, briquette molds, tanks, Gilmore needles, vicat apparatus, sieves, hot water tanks, specific gravity apparatus, slate slabs, sample barrels of cement, and other necessary apparatus.

Hydraulic Laboratory.

The equipment of the Hydraulic Laboratory consists of a tank in the third story of the building, affording a constant head; and in the laboratory, tanks supplied with various shaped notches and orifices for discharge instruments, pipes arranged for determining resistance to flow in same, standard orifices and tubes. The laboratory also contains a Venturi meter, water meters, piezometers, current meters, an A Doble 12-inch experimental water wheel equipped for experimental work, Pitot's tubes, a hook gage, platform scales. hose, and various smaller pieces of hydraulic apparatus.

Laboratory of Applied Mechanics.

The Laboratory of Applied Mechanics is equipped with a 30,000-pound Olsen testing machine direct connected to an electric motor; a 100,000-pound Olsen testing machine driven by an electric motor; a 200,000-pound Riehle testing machine that will test a 16-foot beam and an 8-foot column, direct connected to an electric motor; extensometers; compressometers; a 50,000-in. lb. Olsen torsion testing machine, direct connected to an electric motor; a flexure machine; a stone saw; and miscellaneous small tools and apparatus necessary for making commercial tests of iron, steel, brick, stone and wood. The laboratory is equipped with an Olsen brick rattler, and all other equipment necessary for making commercial tests of paving brick. The equipment of the cement laboratory is available for work in testing cements, mortars, and concrete.

Road Materials Testing Laboratory.

The equipment of the road materials testing laboratory consists of a Page impact machine for testing toughness of rock, a Page im-

pact machine for cementation tests, a two cylinder abrasion machine, Deval type, a Dorry hardness machine, grinding lap, drying oven, drill press, diamond stone saw, a ball mill and other minor equipment for making commercial tests of road materials.

U. S. Government Timber Testing Station.

In addition to the above equipment the Laboratory of Applied Mechanics contains the following equipment especially designed for the work of the U. S. Government Timber Testing Station: A Greaves & Klusman No. 3 planer driven by an electric motor; a J. A. Fay & Egan No. 77 rip and crosscut saw driven by an electric motor; a drying oven; a three point loader; a photographic dark room with full equipment; and miscellaneous tools. The laboratory has an overhead track and a one-ton hoist for handling heavy timbers and reinforced concrete beams. All apparatus in the laboratory is available for instructional purposes.

ELECTRICAL ENGINEERING LABORATORIES.

The Electrical Engineering Laboratories are well equipped for the study of direct and alternating current apparatus, electrical testing and the investigation of problems concerning the design, installation and operation of electrical apparatus.

Dynamo Laboratories.

The laboratories include in their equipment a 50 horse power alternating current motor, three phase; a 30 K. W. direct current, compound generator, belted type; a 10 K. W. rotary converter of special design, with six collector rings and arranged for operation as a single phase, two phase or three phase machine, compound wound and equipped with dampners, and all necessary starting and regulating devices; a 7½-K. W. double current generator, 60 cycles A. C. and arranged for operation as a single phase or two phase machine; a 7½-K. W. revolving field alternator, the armature windings of which are wound in sections, the ends of each section being brought out to suitable terminal blocks, and designed to give single, two, three, or six phase currents; a 10 horse power U. S. shunt generator; two 3 horse power bi-polar machines, for use as direct current motors or generators; a 7½-K. W. three phase induction motor, with three interchangeable rotors, representing the three commercial types, a squirrel cage, internal, and external resistance; a starting resistance and controller for the above induction motor;

a 10 horse power alternating current series compensated motor with suitable controller; a twenty-light Brush arc lighting dynamo; a 100-light Brush arc lighting dynamo; a 60-K. W. single phase composite wound alternating current generator; a 30-ampere mercury rectifier; a 20-K. W. direct current, compound motor; a two phase, 1 horse power inductor motor, and several small generators and motors. The electrical equipment of shops and heating system are also available for special tests and investigations. A direct-current test table equipped with lamp bank, switchboard, meters, and two three horse power motors comprises a special portable set for laboratory testing and lecture room demonstration. The transformer equipment comprises types of modern transformers of various sizes; two sets of transformers for two to three phase transformation or vice versa; an auto-transformer of special design, giving a wide range of voltages; a twelve-light constant current transformer, and other transformers for special purposes.

Photometry Laboratory.

The photometer room is large and well ventilated. It contains a Reichsanstalt photometer with a 250 centimeter scale, equipped with both Bunsen and Lummer Brodhun screens, and a special integrating arc light photometer. The standards include an amyl acetate lamp with Reichsanstalt certificate and aged incandescent lamps which have been compared with the best available standards. The necessary accessories for exact photometric work, such as lamp holders, spinners, rheostats, etc., are included in the equipment. Cooper Hewitt (Mercury Vapor) lamps, arc lamps of various makes and types, Nernst and other forms of incandescent lamps are used for experimental purposes.

Telephone Apparatus.

For the use of classes in telephony, there is a complete telephone laboratory equipment, consisting of a number of the different types of subscribers' sets, together with the necessary central office apparatus and protective devices.

High Frequency Equipment.

For the investigation of high tension and high frequency phenomena, the transformer laboratory has recently been equipped with a 22,000 volt transformer, a large condenser, and a number of Tesla coils of special construction.

Electrical Standardizing Laboratory.

The department has a very complete equipment for testing and calibrating all types of electrical measuring instruments for both alternating and direct currents.

Besides the standards, which are among the best obtainable, the equipment comprises a number of motor-generator sets from which may be obtained a wide range of voltages and currents, and all commercial frequencies and power factors.

Measuring Instruments.

The department possesses a large equipment of wattmeters, alternating and direct current ammeters and voltmeters of various ranges and representative makes.

A great variety of integrating wattmeters are used for experimental purposes and synchronizers, water rheostats, two lamp banks, a transformer bank and other accessories are provided for testing work. Two test tables designed to be easily moved from room to room and provided with individual lamp bank resistance, one three-phase test table, one direct current table, and a three-phase induction coil are also included in the laboratory equipment.

Commercial Testing.

The University power plant affords the students an excellent opportunity for making commercial tests. The equipmnet consists of a 150 K. W. three-phase slow speed unit; a 75 K. W. three-phase direct connected alternator with belted exciter; a 35 K. W. direct current compound generator, direct connected; a 25 K. W. steam turbine exciter unit; a 35 K. W. motor generator set; and a thoroughly modern ten panel switchboard.

MECHANICAL ENGINEERING LABORATORY.

The Mechanical Laboratory contains the following apparatus for instructing students in practical experimental engineering: Viscosimeters and similar apparatus for testing viscosity and other qualities of lubricating oils; calorimeters for determining dryness and heat of steam; injectors and water meters for measuring water for boiler trials; thermometers and pyrometers for measurment of temperatures; Bunte gas burrettes and chemical reagents for tests of chimney flue gases; anemometers for study of heating and ventilation; a Parr calorimeter and an Emerson bomb; calorimeters for the determination of the value of fuels; indicators, reducing motions and planimeters for indicator tests of engines; hydrom-

eters for determinations of specific gravity of liquids; micrometers and extensometers for fine measurements; gauges and manometers for pressures; a Westinghouse Air Brake outfit; a six by nine Sturtevant engine for indicator work; a Rumsey hydraulic ram; two twenty-inch centrifugal pumps; a ten by twelve Ames engine; a three by two by three and one-half Duplex steam pump; a four by two by six Cameron pump; a five by three by eight Davidson pump; an eight horse power gas engine; a Wheeler surface condenser, capacity 2,500 pounds of steam per hour; and a two-ton ice machine. The University power plant and heating system, consisting of three boilers of 600 horse power capacity, a 225 horse power Murry corliss engine, a 125 horse power Chuse engine, a Leyner air compressor, capacity 200 cubic feet per minute; a 50 horse power Harrisburg engine, several blowers and pumps furnish opportunities close at hand for efficiency tests of boilers with different fuels and of the engines at varying loads.

Workshop Equipment.

The forge room occupies a space forty by forty feet. The forge equipment consists of the latest type of Buffalo down-draft forges, each with anvil, providing accommodations for twenty students at each session, and also accessory tools for forging, welding, and tool dressing.

The foundry occupies a room forty by forty feet, and contains a Newton cupola furnace, capable of melting two tons of iron per hour, ladles, flasks, and all necessary small tools and a stock of patterns.

The forges and cupola are served by three centrifugal fans, which are operated by a ten horse power electric motor.

The machine shop occupies a room forty by eighty feet, and is equipped with iron workers' benches; a large Davis & Eagan planer; a Cincinnati milling machine No. 1½; a power hack saw; a Read speed lathe; a Barnes drill press; a Barnes wet emery grinder; a grindstone; a fourteen-inch Lodge & Sharpley engine lathe; a sixteen-inch shaper; a fourteen-inch Putnam engine lathe; an eighteen-inch Davis & Eagan engine lathe; an eighteen-inch Putnam engine lathe; and an eighteen-inch Le Blond engine lathe. In one end of the shop is a large tool room, containing a good assortment of small tools and instruments of precision.

The wood shops occupy two rooms on the first floor, each forty

by forty feet; each shop has its own tool room, and is well equipped with benches and speed lathes for fitting and turning work.

GENERAL ENGINEERING DRAWING.

A large well-lighted room, forty by eighty feet in the Engineering Shops is equipped for courses in Drawing and Descriptive Geometry. It is provided with convenient desks and drawers. Convenient files are provided for keeping the finished drawings. The apparatus for instruction and practice consists of over one hundred models, two folding plane frames of special design, a pantograph, a universal drafting machine, and numerous special drawing instruments. Besides the usual apparatus of frames, bath, and dark room for sun blue printing, the department has an electric blue printing machine. This machine is of the vertical cylinder type with clock mechanism for lowering the lamp in the cylinder. Its capacity is two prints, size forty-two by forty-four inches, at one exposure. A very serviceable appliance for cutting paper and cloth from rolls consists of a specially designed table. It is provided with rectilinear graduations, and a box at one end for inclosing the roll when the piece to be used has been cut off. A photographic apparatus has been imported for making lantern slides used in connection with class work.

ENGINEERING LIBRARY.

In addition to books on engineering and scientific subjects in the main University library there is an engineering library located in the Engineering Building. The engineering library contains fairly complete files of bound volumes of proceedings and transactions of engineering societies and more than forty of the best known engineering magazines in America and Europe. The files of proceedings of societies and magazines are made more usable through a very complete set of indexes to engineering literature. The library also contains the standard encyclopedias and dictionaries, as well as numerous standard reference books.

ENGINEERING COURSES

CIVIL ENGINEERING

The work in this department is designed to furnish a thorough course of theoretical instruction, accompanied by practice in the various lines of Civil Engineering. While the course is made practical by giving the student a large amount of practice in the field, the drafting and computing room, and the laboratory, the main object is the development of the mental faculties and judgment of the student.

The general studies and surveying of the first two years lead up to courses in theoretical and applied mechanics, railroads, roads and pavements, hydraulics, graphic statics and geodesy in the junior year, followed in the senior year by courses in bridge design, design of mill buildings and bins, water supply, sewerage, masonry construction, reinforced concrete construction, tunneling, and irrigation engineering.

Besides instruction in strictly engineering subjects, courses are given in language, economics, rhetoric, geology, bacteriology, astronomy, and the law of contracts.

Special stress is placed on the field and laboratory work as an aid to the thorough understanding of the theoretical courses. The thesis in the senior year is intended to give the student an opportunity to work out a problem on his own resources and to teach him to be self-reliant.

Numerous inspection trips are made during the junior and senior years, to give the students an opportunity to get in touch with the practical side of engineering work.

ELECTRICAL ENGINEERING

It is the aim of the Department of Electrical Engineering to provide thorough theoretical and practical training for those desirous of engaging in the various applications of electricity to the arts.

Electrical engineering work proper begins in the junior year with courses in electricity and magnetism, theory and method of electrical measurements with direct applications to the theory, design and operation of continuous current apparatus. The theoreti-

cal work in alternating currents is begun in the second semester of this year.

The senior year is largely devoted to a study of the design and operation of alternating current apparatus, such as generators, transformers, synchronous and induction motors, rotary converters and transformers; distribution and transmission, electric traction and power plant construction and operation, lighting and metering; the telephone and telegraph; and other applications of electricity to the arts. The design of apparatus is studied by lectures and solution of problems in the drawing room.

Particular attention is given throughout to the proper correlation of class-room study to laboratory work; to this end courses are given in the testing and handling of the various types of direct and alternating current machinery.

In connection with the work in lighting and illumination, complete tests are made of the various types of electric lamps.

Frequent inspection trips are made to the numerous large power plants in the vicinity, and every opportunity is taken to acquaint the student with the engineering problems of his profession. A senior thesis required for graduation, proves most valuable in developing the students' originality.

MECHANICAL ENGINEERING

This course is intended to train students along the broad lines of Mechanical Engineering.

In the second year the students are given practical instruction in elementary studies of the kinematics of machinery and of machine design.

In the junior and senior years, the course becomes more strongly differentiated from other engineering courses, and assumes its professional aspect. It includes the theory of machine design, valve-gear movements, applied mechanics of both building structures and moving machinery; thermodynamics, including the study of steam, gasoline and refrigerator engines; the theory of direct current electricity, and practical instruction in designing specific machines and power plants; shop-work; thorough instruction in the electrical and mechanical laboratories, in efficiency tests of engines, boilers, motors, blowers, pumps, calorimeters, injectors, etc., as well as general tests of boiler feed waters, lubricating oils, cements, flue

gases, steam, fuels, steel and iron. Students will also be given instruction in conducting practical duty trials of power plants. The University heating plant is available for this at all times. In the second semester of the senior year, each student is expected to devote considerable time to research in preparing a graduation thesis on some original subject.

CHEMICAL ENGINEERING

The great development in the United States during the last decade, of chemical and metallurgical industries, such as the manufacture of alkalies, fertilizers, beet sugar, Portland cement, by-products from coal and petroleum, acids from sulphide ores, plate glass, pottery, etc., where a combined knowledge of mechanical engineering and chemistry is needed for competent supervision, has suggested the inauguration of this course. The course in Chemical Engineering is designed to give a major in chemistry and to give fundamental training in engineering. Students taking this course pursue courses in chemistry, physics, mathematics, mechanics and surveying for the first two years; in the junior and senior years, they are given special instruction in designing chemical machinery and in chemical analysis of fuels, gases, steel and iron, electrometallurgy, etc.

REQUIREMENTS FOR DEGREE OF BACHELOR OF SCIENCE IN ENGINEERING

CIVIL ENGINEERING

FRESHMAN YEAR

FIRST SEMESTER			SECOND SEMESTER		
Algebra	(Eng. Math. 1)*	3	Anal. Geometry	(Eng. Math. 3)	5
Trigonometry	(Eng. Math. 2)	2			
Chemistry Lect.	(Chem. 1)	3	Chemistry Lect.	(Chem. 1)	3
Chemistry Lab.	(Chem. 2)	2	Qual. Analysis	(Chem. 3)	2
German	(Eng. Lang. 3)		German	(Eng. Lang. 4)	
French	(Eng. Lang. 5)		French	(Eng. Lang. 6)	
or Spanish	(Eng. Lang. 7)	3	or Spanish	(Eng. Lang. 8)	3
Rhetoric	(Eng. Lang. 1)	2	Rhetoric	(Eng. Lang. 2)	2
Drawing	(Draw. 1)	3	Descript. Geom.	(Draw. 3)	3
		18			18

SOPHOMORE YEAR

FIRST SEMESTER			SECOND SEMESTER		
Diff. Calculus	(Eng. Math. 4)	5	Int. Calculus	(Eng. Math. 5)	5
Physics	(Phys. 1 and 3)	5	Physics	(Phys. 2 and 4)	5
Economics	(Econ. 3)	3	Technical Mech.	(C. E. 5a)	2
Surveying	(C.E.1)	4	Top. Surveying	(C. E. 2)	4
Roads and Pavements	(C. E. 11)	1	R. R. Curves	(C. E. 3)	1
			Engineering Materials	(C. E. 18)	1
		18			18

*These references are to the description of courses in the College of Liberal Arts or to the description of courses in the College of Engineering.

JUNIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Technical Mech.	(C. E. 5b)	3	Hydraulics	(C. E. 7)	2
Applied Mech.	(C. E. 6)	3	Hydraulic Lab.	(C. E. 21)	1
Industrial Electricity	(E.E. 9)	2	App. Mech. Lab.	(C. E. 22)	1
Geology	(Geol. 6)	3	Geodesy and Least Squares	(Eng. Math. 6)	2
Railroads	(C. E. 4)	5	Steam Engines	(M. E. 3)	2
Bacteriology	(C. E. 13a)	2	Geology	(Geol. 6)	3
			Algebraic and Graphic Statics	(C. E. 8)	3
			Structural Details	(C. E. 30)	2
			R. R. Terminals and Block Signals	(C. E. 4a)	2
		18			18

SENIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Bridge Analysis	(C. E. 10)	3	Bridge Design	(C. E. 31)	3
Steel Mill Bldgs.	(C. E. 12)	3	Higher Structures	(C. E. 16)	3
Water Supply	(C. E. 13)	3	Engineering Contracts and Specifications	(C. E. 17)	2
Reinforced Concrete Structures	(C. E. 19)	2	Irrigation Eng.	(C. E. 15)	2
Masonry Const.	(C. E. 9)	5	Sewerage	(C. E. 14)	2
Water Power Engineering	(C. E. 20)	2	C. E. Seminar	(C. E. 34)	1
			Thesis		3
		18			16

ELECTRICAL ENGINEERING

FRESHMAN YEAR

FIRST SEMESTER			SECOND SEMESTER		
Algebra	(Eng. Math. 1)	3	Anal. Geometry	(Eng. Math. 3)	5
Trigonometry	(Eng. Math. 2)	2			
Chemistry Lect.	(Chem. 1)	3	Chemistry Lect.	(Chem. 1)	3
Chemistry Lab.	(Chem. 2)	2	Qual. Analysis	(Chem. 3)	2
German	(Eng. Lang. 3)		German	(Eng. Lang. 4)	
French	(Eng. Lang. 5)		French	(Eng. Lang. 6)	
or Spanish	(Eng. Lang. 7)	3	or Spanish	(Eng. Lang. 8)	3
Rhetoric	(Eng. Lang. 1)	2	Rhetoric	(Eng. Lang. 2)	2
Drawing	(Draw. 1)	3	Descript. Geom.	(Draw. 3)	3
		18			18

SOPHOMORE YEAR

FIRST SEMESTER			SECOND SEMESTER		
Diff. Calculus	(Eng. Math. 4)	5	Int. Calculus	(Eng. Math. 5)	5
Physics	(Phys. 1 and 3)	5	Physics	(Phys. 2 and 4)	5
Forging	(Shop 2)	2	Machine Shop and Foundry	(Shop 6)	3
Wood Shop and Pattern Making	(Shop 1)	3	Mach. Drawing	(M. E. 31)	2
Kinematics	(M. E. 1)	2	Engineering Materials	(C. E. 18)	1
Mach. Drawing	(M. E. 30)	1	Mechanics	(Phys. 6)	2
		18			18

JUNIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Mechanics	(Phys. 7)	3	Applied Mech.	(C. E. 6)	3
Steam Engines and Boilers	(M. E. 2)	4	App. Mech. Lab.	(C. E. 22)	1
Dyn. Elec. Mach.	(E. E. 1a)	3	Economics	(Econ. 3)	3
Illumination and Photometry	(E. E. 8)	2	Thermodynamics	(M. E. 5)	2
Theory Elec. and Mag.	(Phys. 8)	4	Dyn. Elec. Mach.	(E. E. 2)	4
Elec. Meas.	(Phys. 9)	2	Mach. Design	(M. E. 32)	2
			D. C. Lab.	(E. E. 21)	2
			Mech. Lab.	(M. E. 21)	1
		18			18

SENIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Theory of Alt. Currents	(E. E. 3)	4	A. C. Mach.	(E. E. 4)	3
A. C. Lab.	(E. E. 22)	3	Surveying	(C. E. 32)	2
Thermodynamics	(M. E. 7)	2	Engineering Contracts and Specifications	(C. E. 17)	2
Hydraulics	(C. E. 7)	2	Electric Ry. Engineering	(E. E. 7)	2
Telephone Engineering	(E. E. 5)	2	Transmission and Distribution	(E. E. 6)	2
E. E. Design	(E. E. 31)	2	Central Station Design	(E. E. 14)	2
Steam Eng. Lab.	(M. E. 22)	2	Thesis		3
E. E. Seminar	(E. E. 12)	1			
		18			16

MECHANICAL ENGINEERING

FRESHMAN YEAR

FIRST SEMESTER			SECOND SEMESTER		
Algebra	(Eng. Math. 1)	3	Anal. Geometry	(Eng. Math. 3)	5
Trigonometry	(Eng. Math. 2)	2			
Chemistry Lect.	(Chem. 1)	3	Chemistry Lect.	(Chem. 1)	3
Chemistry Lab.	(Chem. 2)	2	Qual. Analysis	(Chem. 3)	2
German	(Eng. Lang. 3)		German	(Eng. Lang. 4)	
French	(Eng. Lang. 5)		French	(Eng. Lang. 6)	
or Spanish	(Eng. Lang. 7)	3	or Spanish	(Eng. Lang. 8)	3
Rhetoric	(Eng. Lang. 1)	2	Rhetoric	(Eng. Lang. 2)	2
Drawing	(Draw. 1)	3	Descript. Geom.	(Draw. 3)	3
		18			18

SOPHOMORE YEAR

FIRST SEMESTER			SECOND SEMESTER		
Diff. Calculus	(Eng. Math. 4)	5	Int. Calculus	(Eng. Math. 5)	5
Physics	(Phys. 1 and 3)	5	Physics	(Phys. 2 and 4)	5
Wood Shop and Pattern Making	(Shop 1)	3	Foundry	(Shop 4)	2
Forging	(Shop 2)	2	Pattern Making	(Shop 3)	1
Kinematics	(M. E. 1)	2	Mach. Drawing	(M. E. 31)	2
Mach. Drawing	(M. E. 30)	1	Technical Mech.	(C. E. 5a)	2
			Engineering Materials	(C. E. 18)	1
		18			18

JUNIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Technical Mech.	(C. E. 5b)	3	Hydraulics	(C. E. 7)	2
Applied Mechanics	(C. E. 6)	3	App. Mech. Lab.	(C. E. 22)	1
Steam Engines and Boilers	(M. E. 2)	4	Thermodynamics	(M. E. 5)	2
Dyn. Elec. Mach.	(E. E. 1b)	2	Electrical Mach.	(E. E. 10)	2
Mach. Design	(M. E. 32)	3	E. E. Lab.	(E. E. 24)	2
			Economics	(Econ. 3)	3
			Mach. Design	(M. E. 33)	3
Machine Shop	(Shop 5)	3	Mech. Lab.	(M. E. 21)	1
			Heat and Vent.	(M. E. 6)	2
		18			18

SENIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Thermodynamics	(M. E. 7)	2	Steam Turbines	(M. E. 14)	2
Steam Eng. Design	(M. E. 34)	4	Engineering Contracts and Specifications	(C. E. 17)	2
Gas Engines	(M. E. 8)	1	Power Plant Design	(M. E. 35)	2
Steam Eng. Lab.	(M. E. 22)	2	M. E. Lab.	(M. E. 23)	2
Hydraulic Mach.	(M. E. 9)	2	Railway Mech. Engineering	(M. E. 15)	2
Valve Gears	(M. E. 11)	1	Compressed Air	(M. E. 16)	1
M. E. Seminar and Problems	(M. E. 12)	2	Surveying	(C. E. 32)	2
Shop Economics	(M. E. 10)	2	Thesis		3
Structural Engineering	(C. E. 33)	2			
		18			16

CHEMICAL ENGINEERING

FRESHMAN YEAR

FIRST SEMESTER			SECOND SEMESTER		
Algebra	(Eng. Math. 1)	3	Anal. Geometry	(Eng. Math. 3)	5
Trigonometry	(Eng. Math. 2)	2	Chemistry Lect.	(Chem. 1)	3
Chemistry Lect.	(Chem. 1)	3	Qual. Analysis	(Chem. 3)	2
Chemistry Lab.	(Chem. 2)	2	German	(Eng. Lang. 4)	
German	(Eng. Lang. 3)		French	(Eng. Lang. 6)	
French	(Eng. Lang. 5)		or Spanish	(Eng. Lang. 8)	3
or Spanish	(Eng. Lang. 7)	3	Rhetoric	(Eng. Lang. 2)	2
Rhetoric	(Eng. Lang. 1)	2	Descript. Geom.	(Draw. 3)	3
Drawing	(Draw. 1)	3			
		18			18

SOPHOMORE YEAR

FIRST SEMESTER			SECOND SEMESTER		
Diff. Calculus	(Eng. Math. 4)	5	Int. Calculus	(Eng. Math. 5)	5
Physics	(Phys. 1 and 3)	5	Physics	(Phys. 2 and 4)	5
Qual. Analysis	(Chem. 4)	2	Quant. Analysis	(Chem. 6a and 6b)	4
Quant. Analysis	(Chem. 5a and 5b)	4	Technical Mech.	(C. E. 5a)	2
Kinematics	(M. E. 1)	2	Surveying	(C. E. 32)	2
		18			18

JUNIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Technical Mech.	(C. E. 5b)	3	Hydraulics	(C. E. 7)	2
Applied Mech.	(C. E. 6)	3	App. Mech. Lab.	(C. E. 22)	1
Steam Engines and Boilers	(M. E. 2)	4	Thermodynamics	(M. E. 5)	2
Phys. Chem. Lect.	(Chem. 17)	3	Mech Lab. Including Gas Analysis		2
Mach. Draw.	(M. E. 30)	3	Organic Chem. Lect.	(Chem. 12)	4
Mach. Design	(M. E. 32)	2	Organic Preparations	(Chem. 14)	3
			Electro-Chem. Lect.	(Chem. 19)	2
			Mach. Design	(M. E. 32)	2
		18			18

SENIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Thermodynamics	(M. E. 7)	2	Electrical Mach.	(E. E. 10)	2
Steam Engine Lab.	(M. E. 22)	2	M. E. Lab.	(M. E. 23)	1
Dyn. Elec. Mach.	(E. E. 1b)	2	E. E. Lab.	(E. E. 24)	2
Structural Eng.	(C. E. 33)	2	Industrial Chem.	(Chem. 24)	3
Gas Engines	(M. E. 8)	1	Ore Analysis	(Chem. 10)	2
Physical and Electro-Chem. Lab.	(Chem. 18 and 21)	2	Economic Geol.	(Geol. 8)	3
Economic Geol.	(Geol. 7)	3	Engineering Contracts and Specifications	(C. E. 17)	2
Assaying	(Min. 7)	2	Thesis		1
Thesis		2			
		18			16

DESCRIPTION OF COURSES OF STUDY

CIVIL ENGINEERING

1. Surveying. First semester. 4 h.

Instruction is given in the theory of surveying and in the theory, use and adjustment of the compass, level, transit, plane table and sextant. The field work includes pacing and chaining surveys; compass and transit traverses; measurement of angles by repetition; differential, profile, and contour leveling; traverses with the plane-table, etc. Maps and reports are required. Considerable time is given to a study of U. S. Land Survey methods, and to court decisions relating to relocation of corners, lines, and boundaries.

Text-books: Pence and Ketchum's Surveying Manual; Allen's Field and Office Tables.

Prerequisite: Eng. Math. 1 and 2, and Drawing 1.

2. Topographic Surveying. Second semester. 4 h.

In this course the theory and use of the stadia, the aneroid barometer, base line apparatus, and other instruments used in topographic surveys are studied, and the different methods of making topographic surveys are discussed. A complete topographic survey based on a carefully designed triangulation system is made; the angles are measured by repetition, and base lines are measured with precision. The calculations are made and a map is drawn. A survey is made of a city block, and complete surveys are made of a city street and a mining claim. Considerable time is devoted to topographic drawing.

Text-books: Pence and Ketchum's Surveying Manual; Wilson's Topographic Surveying; and Notes by the Department.

Prerequisite: C. E. 1.

3. Railroad Curves. Second semester. 1 h.

A study is made of simple and compound curves. Instruction consists of recitations, problems, and field locations.

Text-books: Allen's Railroad Curves and Earthwork.

Prerequisite: C. E. 1, and to be taken with C. E. 2.

4. Railroad Engineering. First semester. 5 h.

Instruction in Railroad Engineering consists of field practice, office and class-room work. Field practice consists of the

complete location of a line of railroad, including reconnaissance, preliminary, paper location, final location, and cross-sectioning. In the office the quantities are calculated and profiles and a complete map are drawn. In the class-room a detailed study is made of the principles of economic location and construction, maintenance of way, and railway structures and appliances.

Text-books: Allen's Railroad Curves and Earthwork; Webb's Economics of Railroad Construction; Tratman's Track and Track Work; Talbot's Railway Transition Spiral.

Prerequisite: C. E. 1, 2, and 3.

4a. Railroad Terminals and Block Signals. Second semester. 2 h.

This course includes a study of the design of train yards with special attention given to gravity layouts; methods of switching and of making up trains; special terminal arrangements for large cities; terminal structures, such as coal pockets, ash pits, transfer platforms, freight houses, water service, ice houses, docks, train sheds, etc. Some time is also devoted to railway signaling.

Text-book: Droege's Freight Terminals and Trains, and Notes.

Prerequisite: C. E. 4.

5a. Technical Mechanics. Second semester. 2 h.

The mechanics of engineering rather than of astronomy and physics is here considered. Particular attention is given to developing and fixing fundamental concepts of equilibrium and motion as applied to engineering problems. Both algebraic and graphic methods of the calculation of problems are considered. This course is followed in the first semester of the junior year by Technical Mechanics 5b.

Text-book: Maurer's Technical Mechanics.

Prerequisite: Eng. Math. 4, and registration in Eng. Math. 5.

5b. Technical Mechanics. First semester. 3 h.

A continuation of C. E. 5a.

Text-book: Maurer's Technical Mechanics.

Prerequisite: Eng. Math. 5, and C. E. 5a.

6. Applied Mechanics. First and second semesters. 3 h.

Recitations, problems, lectures.

The following subjects are taken up: elasticity of materials;

stress and strain; working stresses; resistance of pipes and riveted joints; bending moment; resisting moment; shear; elastic curve of beams; torsion; internal stress; fatigue of metals, etc. Some time is given to the quality and requirements of engineering materials.

Text-book: Merriman's Mechanics of Materials.

Prerequisite: Eng. Math. 4 and 5, and Physics 6 or C. E. 5.

7. Hydraulics. First and second semesters. 2 h.

Recitations, problems, lectures.

The following subjects are taken up; weight and pressure of water; head; center of pressure; velocity and discharge through orifices, tubes, nozzles, pipes, hose, weirs, conduits, canals, rivers; meters and measurements; motors, turbines, and water wheels; water power.

Text-book: Hoskin's Hydraulics.

Prerequisite: Eng. Math. 4 and 5, and Physics 6 or C. E. 5, and C. E. 6.

8. Algebraic and Graphic Statics. Second semester. 3 h.

The elements of statics by algebraic and graphic methods, and stresses in simple roof trusses and bridges.

Text-book: Ketchum's Design of Steel Mill Buildings.

Prerequisite: C. E. 5 and 6.

9. Masonry Construction. First semester. 5 h.

A study of cements, concrete, retaining walls, dams, arches, and other masonry and reinforced concrete structures. A complete investigation of a reinforced concrete arch is made, using the elastic theory. Considerable time is given to the design of structures.

Text-books: Taylor and Thompson's Concrete, Plain and Reinforced, and Baker's Masonry Construction.

Prerequisite: C. E. 5, 6 and 8.

10. Bridge Analysis. First semester. 3 h.

This course includes the calculations of stresses in bridges and girders loaded with uniform and concentrated loads, by algebraic and graphic methods; stresses in portals, pins, and other details preliminary to bridge design. Each student calculates the stresses in, and investigates the efficiencies of, the members of a highway bridge.

Text-book: Ketchum's Design of Highway Bridges.
Prerequisite: C. E. 8 and 30.

11. Roads and Pavements. First semester. 1 h.
A detailed study of country roads and city pavements, together with a study of road building materials.
Text-book: Baker's Roads and Pavements.
Prerequisite: registration in C. E. 1.

12. Steel Mill Buildings. First semester. 3 h.
A study of steel mill buildings, mine structures, grain elevators, ore bins, retaining walls, etc.
Text-books: Ketchum's Design of Steel Mill Buildings; Ketchum's Design of Walls, Bins, and Grain Elevators.
Prerequisite: C. E. 8 and 30, and to be taken with C. E. 10.

13. Water Supply. First semester. 3 h.
The principal features of water works design and construction, including quantity and quality of potable water; choice of supply; the designing of distribution systems, reservoirs, dams, and elevated tanks.
Text-book: Turneaure and Russell's Public Water Supplies.
Prerequisite: C. E. 7 and 13a.

13a. Bacteriology. First semester. 2 h.
Lectures and laboratory demonstration.
Bacteriological methods and their application in water analysis and sewerage.
Prerequisite: Chemistry 1 and 2, and Physics 1 to 4.

14. Sewerage. Second semester. 2 h.
The design and construction of sewerage systems, including separate and combined systems; surveys and plans; determination of size and capacity; construction; and modern methods of sewage disposal.
Text-book: Folwell's Sewerage, and Notes.
Prerequisite: C. E. 7 and 13.

15. Irrigation Engineering. Second semester. 2 h.
In this course a study is made of the fundamental principles of irrigation engineering, including the design and construction of reservoirs, dams, flumes, canals, and other irrigation works.
Text-book: Wilson's Irrigation Engineering.
Prerequisite: C. E. 7, 9, and 13.

16. Higher Structures. Second semester. 3 h.

The calculation of stresses in swing bridges, suspension bridges, arch bridges, and cantilever bridges, office building frames, and other statically indeterminate structures.

Text-book: Johnson, Bryan and Turneaure's Framed Structures, Part II, and notes.

Prerequisite: C. E. 10 and 12, and to be taken with C. E. 30.

17. Engineering Contracts and Specifications. Second semester. 2 h. For senior students only.

The law of engineering contracts and specifications. Emphasis is placed on the importance of the clear and definite writing of contracts and specifications, and considerable practice is given the student in the preparation of contracts and specifications.

Text-book: Tucker's Contracts in Engineering.

18. Engineering Materials. Second semester. 1 h.

A study is made of the properties and requirements for materials used in engineering construction, the effect of different methods of manufacture upon the quality of the material, and specifications and standard tests for materials.

Prerequisite: Eng. Math. 3 and Physics 1.

19. Reinforced Concrete Structures. First semester. 2 h.

A study is made of the theory of reinforced concrete, and the design of reinforced concrete structures.

Text-books: Turneaure and Maurer's Reinforced Concrete; Ketchum's Design of Walls, Bins, and Grain Elevators, and references.

Prerequisite: C. E. 8, and registration in C. E. 9.

20. Water Power Engineering. First semester. 2 h.

Stream flow including hydrographs of actual streams; impulse wheels and reaction turbines and the conditions governing their selection; storage and the relation of the reservoir to the power station; economics of power development, its sale and distribution.

Text-book: Mead's Water Power Engineering.

Prerequisite: C. E. 4, 7, and 8, and registration in C. E. 9.

21. Hydraulic Laboratory. Second semester. 1 h.

Experiments on flow of water over weirs, through orifices in

open channels and pipes; test of pumps; reaction and turbine water wheels, etc.; determination of coefficients of friction in hose and pipes.

Prerequisite: C. E. 5, and registration in C. E. 7.

22. Applied Mechanics Laboratory. Second semester. 1 h.

Experiments on strength of steel, wrought and cast iron; shear on rivets; strength of wood; and tensile and compressive strength of Portland cement, brick and building stone.

Prerequisite: to be taken with C. E. 6.

30. Structural Details. Second semester. 2 h.

The student traces the shop drawings of a highway bridge; details beams, columns and connections; and calculates the weight of a highway bridge.

Text-book: Ketchum's Design of Highway Bridges.

Prerequisite: to be taken with C. E. 8.

31. Bridge Design. Second semester. 3 h.

The detailed design of a railway truss bridge and a railway plate girder, including the making of complete detail drawings and an estimate of weight and cost.

Text-books: Merriman and Jacoby's Bridges, Part III, and Notes on Bridge Design.

Prerequisite: C. E. 10.

32. Elementary Surveying. Second semester. 2 h.

A brief course in surveying and in the theory and use of the level, transit, and other instruments for electrical, mechanical, and chemical engineering students. The work covers problems in pacing, chaining, compass and transit surveys, profile and contour leveling, laying out buildings, etc.

Text-book: Pence and Ketchum's Surveying Manual.

Prerequisite: Eng. Math. 1, 2, and 3, Draw. 1, and Physics 1 and 2.

33. Structural Engineering. First semester. 2 h.

This course includes the elements of statics by algebraic and graphic methods, the calculation of stresses in roof trusses, and the design of shops and mill buildings.

Text-book: Ketchum's Design of Steel Mill Buildings.

Prerequisite: C. E. 6.

34. C. E. Seminar. Second semester. 1 h.
A study is made of technical periodicals and literature.
Prerequisite: C. E. 9, 10, 19, and 13.

35. Mine Structures. 2 h. Elective.
A study of the design of head frames, coal tipples, coal washers and breakers, concentrating plants and other mine structures.
Text-book: Ketchum's The Design of Mine Structures.
Prerequisite: C. E. 12, 10, and 19.

For Graduate Courses, see page 144, under "Graduate School."

ELECTRICAL ENGINEERING

1a. Dynamo Electrical Machinery. First semester. 3 h.
A study of the theory of electricity and magnetism, and the magnetic properties of iron and steel; the theory, construction and operation of direct current generators and motors.
Text-book: Elements of Electrical Engineering by Franklin and Esty. The work is supplemented by practical problems throughout the course.
Prerequisite: Physics 3, 4, and 6, and to be taken with Physics 7 and 8.

1b. Dynamo Electric Machinery. First semester. 2 h.
A study of the theory of electricity and magnetism, and the magnetic properties of iron and steel; the theory, construction and operation of the direct current generators and motors.
Text-book: Elements of Electrical Engineering by Franklin and Esty. The work is supplemented by practical problems throughout the course.
Prerequisite: Physics 3 and 4, and to be taken with C. E. 5b.

2. Dynamo Electrical Machinery. Second semester. 4 h.
Continuation of Course 1a, with the addition of an elementary study of alternating currents and alternating current machinery.

3. Theory of Alternating Currents. First semester. 4 h.
A course in the mathematical theory of alternating currents and alternating phenomena and methods of measurements; inductance, capacity, impedance, etc.
Prerequisite: E.E. 2, 8, and 21, and Physics 7 and 8.

4. Alternating Current Machinery. Second semester. 3 h.
Theory, regulation, testing and operation of various kinds of alternating current apparatus, single and polyphase generators, synchronous and induction motors, rotary converters, etc.
Prerequisite: E. E. 3.

5. Telephone Engineering. First semester. 2 h.
The theory of the telephone; land, submarine and wireless telegraphy; telephone and telegraph instruments and systems, and engineering problems.
Prerequisite: E. E. 1a, 2, and 21, and to be taken with E. E. 3.

6. Transmission and Distribution. Second semester. 2 h.
A study of the principles of direct and alternating current distribution for light and power purposes; methods of installation and regulation, illustrated by practical application to specific problems; applications to alternating problems in long distance transmission.
Prerequisite: E. E. 1a, 2, and 3, and to be taken with E. E. 4.

7. Electric Railway Engineering. Second semester. 2 h.
Principles of the design and installation of electric railway systems, storage battery installations, distribution systems; surface, overhead, underground railways, applications to direct and alternating current systems.
Prerequisite: E. E. 1a, 2 and 3, and to be taken with E. E. 4.

8. Illumination and Photometry. First semester. 2 h.
A study of illuminants with respect to their adaptation to interior and exterior lighting and methods of determining the amount, character, and distribution of their light flux. Familiarity with the practice of photometry is gained through laboratory work in connection with this course.
Prerequisite: to be taken with E. E. 1a.

9. Industrial Electricity. First semester. 2 h.
A brief course designed especially for students in other departments to acquaint them with the general principles and applications of electricity and electrical machinery.
Prerequisite: Physics 1 to 4.

10. Electrical Machinery. Second semester. 2 h.
A course designed especially for students in Mechanical and Chemical Engineering departments, some attention being given

near the end of the course to the simpler principles of alternating currents and alternating current machinery.

Prerequisite: E. E. 1b.

11. Primary and Secondary Batteries. 1 h. Elective.

A course devoted primarily to the study of storage batteries, their use, maintenance, and care, and their application to central station work and power distribution.

Prerequisite: E. E. 1a, and to be taken with E. E. 2.

12. E. E. Seminar. First semester. 1 h.

A course in the history of Electrical Engineering and the biography of prominent engineers; also reviews of current electrical literature.

Prerequisite: E. E. 1a and 2, and to be taken with E. E. 3.

13. E. E. Seminar. Second semester. 1 h.

Continuation of E. E. 12.

14. Central Station Design. Second semester. 2 h.

Lectures and problems on the design of electric power plants for city public service, isolated plants, and electric railway service. Complete drawings and details of cost and construction required.

Prerequisite: E. E. 3, and to be taken with E. E. 4.

21. Direct Current Laboratory. Second semester. 2 h.

Experimental study of the characteristics of direct current generators and motors; methods of testing, commercial tests, etc.

Prerequisite: E. E. 1a, and to be taken with E. E. 2.

22. Alternating Current Laboratory. First semester. 3 h.

Experimental study of the properties and performance of alternating current generators, motors, transformers, rotary converters; methods of alternating current measurements and commercial tests.

Prerequisite: to be taken with E. E. 3.

24. Electrical Laboratory. Second semester. 2 h.

A laboratory course in direct and alternating current machinery, testing and operation.

Prerequisite: E. E. 1b, to be taken with E. E. 10.

31. Electrical Engineering Design. First semester. 2 h.
Lectures, problems, drawing.
Principles of design of direct and alternating current apparatus.
Prerequisite: E. E. 1a and 2, and to be taken with E. E. 3.

32. Electrical Engineering Design. Second semester. 2 h. Elective.
Continuation of Course 31.
Prerequisite: E. E. 3, and to be taken with E. E. 4.

For Graduate Courses, see page 145, under "Graduate School."

MECHANICAL ENGINEERING

1. Kinematics. First semester. 2 h.
A study of the relative motions of the parts of machines, instant centers, velocities, gearing and wrapping connectors.
Text-book: Dunkerley's Mechanism.
Prerequisite: Eng. Math. 2, and to be taken with Physics 1 and 3.

2. Steam Engines and Boilers. First semester. 4 h.
Lectures and recitations.
In this course the various types of boilers and engines are studied as well as their construction and operation. Power plant equipment, such as pumps, condensers, piping, pipe covering, steam traps, is taken up.
Text-book: Hutton's Mechanical Engineering of Power Plants.
Prerequisite: Physics 1 to 4.

3. Steam Engines and Boilers. Second semester. 2 h.
This is a course in boilers and steam engines for civil engineering students.
Text-book; Hutton's Mechanical Engineering of Power Plants.
Prerequisite: Physics 1 to 4, and C. E. 5a.

5. Thermodynamics. Second semester. 2 h.
Mechanical theory of heat, laws of transformation, perfect gases, saturated and superheated vapors, various cycles, heat and refrigeration engines.
Text-book: Ennis' Applied Thermodynamics.
Prerequisite: Physics 1 to 4, M. E. 3, and Physics 6, or C. E. 5.

6. Heating and Ventilation. Second semester. 2 h.

A course of lectures is given on this subject in connection with some acceptable text. The different methods of heating and ventilating are investigated with a view to determining their efficiency and economy. The matter of favorable scientific conditions as affected by heating and ventilating is given careful consideration. As a part of the course each student is required to design a system of heating for a given building by some standard method. He also prepares the necessary specifications and contracts and makes out bills of materials.

Text-book: Carpenter's Heating and Ventilating of Buildings.

Prerequisite: M. E. 1 and 2.

7. Thermodynamics. First semester. 2 h.

A continuation of M. E. 5.

The study of the chemical and calorific qualities of coal, coke, petroleum, natural gas, gasoline, and producer gas; the design of various types of boilers, stokers, grates, feed water heaters, purifiers and economizers, condensers, artificial and natural draught, steam and gas engines, and turbines.

Prerequisite: M. E. 2 and 5.

8. Gas Engines. First semester. 1 h.

The purpose of this course is to acquaint the student with the construction and operation of gas engines and producer gas plants.

Text-book: Hutton's Gas Engines.

Prerequisite: M. E. 5.

9. Hydraulic Machinery. First semester. 2 h.

This course makes application of the principles of the dynamics of fluids to the various turbines and other water wheels in general use. Cranes, hoists, engines and other appliances using water are discussed. The efficiency of water as compared with steam, electricity or air under different conditions, is considered.

Text-books: Blaine's Hydraulic Machinery; Barr's Pumping Machinery.

Prerequisite: C. E. 7, and M. E. 2.

10. Shop Economics. First semester. 2 h.

This course of lectures will cover matters relating to the economical design and management of manufacturing property; the capitalization and organization of companies; the organiza-

tion of labor; the calculation of cost; transmission of power; and sanitation.

Prerequisite: M. E. 2 and 32.

11. Valve Gears. First semester. 1 h.

In this course a theoretical and practical study of valve gears and link motions is made. A thorough investigation is made of the various kinds of valves and link motions occurring in the different types of engines and pumps.

Text-book: Halsey's Slide Valve Gears.

Prerequsite: M. E. 2.

12. Mechanical Engineering Seminar and Problems. First semester. 2 h.

This course takes up the review and study of the literature bearing on mechanical engineering. A series of problems is given for the student to solve and report on, similar to those an engineer would meet in every-day practice.

Prerequisite: M. E. 1, 2, 5, and 6.

14. Steam Turbines. Second semester. 2 h.

A study of the principles of the design, installation and management of steam turbine power plants.

Prerequisite: M. E. 2 and 5.

15. Railway Mechanical Engineering. Second semester. 2 h.

The purpose of this course is to give familiarity with the working parts and details of locomotives and railway equipment. Special attention will be given to types, properties, weight on driver, etc. The management and repair of locomotives will also be considered. Railway signals, air brakes, car heating and lighting will be treated.

Text-book: McShane's Locomotive Up To Date.

Prerequisite: M. E. 2 and 5.

16. Compressed Air. Second semester. 1 h.

A study of air compressors; the transmission of compressed air and its application to pneumatic machinery.

Text-book: Peele's Compressed Air.

Prerequisite: M. E. 5.

21. Mechanical Laboratory. Second semester. 1 h.

Experimental work in calibration of planimeters, water meters and gages; tests of dryness and quality of steam; tests of acid-

ity, specific gravity, chilling and flashing points, and viscosity of oils and other lubricating materials; of impurities in boiler feed water; of flow of air with anemometers and draught gages, etc.

Text-book: Carpenter's Experimental Engineering is used as a reference.

Prerequisite: M. E. 2.

22. Steam Engine Laboratory. First semester. 2 h.

Tests of boiler flue gases and combustion of fuels; of efficiency of injectors, engines and boilers; commercial tests of heating and power plants.

Prerequisite: M. E. 2 and 5.

23. Mechanical Laboratory. Second semester. 2 h.

Advanced work in engine testing involving a study of entropy; tests in heating and ventilating.

Prerequisite: M. E. 7 and 21.

30. Machine Drawing. First semester. 1 h.

Lectures and a study of commercial drawings familiarize the student with current practice in Machine Drawing. In addition the most elementary design of machine parts will be taken up.

Prerequisite: registration in M. E. 1.

31. Machine Drawing. Second semester. 2 h.

Drawing from models and sketches. Design of machine elements and kinematic drawings of complete machines.

Prerequisite: M. E. 1 and 30, and registration in C. E. 18.

32. Machine Design. First semester. 3 h.

Lectures and drawing.

A study of the design of machines from the theoretical and practical standpoints; kinematic relation of parts, strength, rigidity, ease and cheapness of construction.

Prerequisite: M. E. 1, and C. E. 18.

33. Machine Design. Second semester. 3 h.

Each student will design some complete machine. Assembly and detail drawings, bill of material, weights and estimate of cost will be required.

Prerequisite: M. E. 1, 30, 31, 32, and C. E. 5a, 5b, and 6.

34. Steam Engine Design. First semester. 4 h.
Recitations and problems.
A study of the practical and theoretical design of simple, compound and triple expansion steam engines.
Prerequisite: M. E. 2, 5, and 33.

35. Power Plant Design. Second semester. 2 h.
This course is supplemental to the course on power plant equipment, and is intended to give students actual experience in computing the requirements of power plants, and making construction drawings for the same.
Prerequisite: M. E. 7 and 34.

For Graduate Courses, see page 145, under "Graduate School."

SHOP WORK

In connection with the shopwork a course of reading is mapped out covering the construction, care and use of the tools and machinery with which the student is working. Written quizzes on this work will be required as near the end of each month as the schedule will permit.

1. Woodworking. First semester. Three periods per week of three hours each. 3 h.
The use of all ordinary wood-working tools in a series of graded exercises, including the use of speed lathe and turning tools. One-third of the time is given to pattern-making.

2. Forging. First semester. Two periods per week of three hours each. 2 h.
Occasional lectures and practical work in the forging and welding of iron and steel, tool dressing, tempering, case hardening, and annealing. Each student makes a set of lathe tools and cold chisels to be used later in the machine shop.

3. Pattern Making. Second semester. One period per week of three hours each. 1 h.
Making patterns for irons and brass castings with allowances for draft and shrinkage and finish.
Prerequisite: Shop 1.

4. Foundry. Second semester. Two periods per week of three hours each. 2 h.

Practical work in the making of moulds and cores; the care and operation of the cupola furnace and the brass furnace; mixing of metals; and the study of the properties of alloys.

5. Machine Shop. First semester. Three periods per week of three hours each. 3 h.

Practical work in chipping and filing of iron, steel, brass, and other metals; the working of metals in lathe, planer and drill press; repair of broken machinery and construction of machines and machine parts.

Prerequisite: Shop 1, 2, and 3.

6. Machine Shop and Foundry. Second semester. Three periods per week of three hours each. 3 h.

This course is for Electrical Engineering students. The time is divided between machine shop and foundry.

Prerequisite: Shop 1 and 2.

GENERAL ENGINEERING DRAWING

1. Mechanical Drawing. First semester. 3 h.

Use of instruments; drawing of geometric figures in isometric, cabinet and orthographic projections. Shading is taught for a two-fold object, viz.: effect on the drawing, and preparation for Descriptive Geometry. Considerable attention is given to lettering.

Text-books: Tracy's Mechanical Drawing, and Reinhardt's Lettering.

2. Mechanical Drawing. Second semester. 2 h.

A continuation of Mechanical Drawing for first semester. The course is arranged especially for the Civil Engineering students, and includes sketching from models, taking dimensions for scaled drawings, topographic drawings and mapping.

Text-book: Reinhardt's Technic of Mechanical Drawing.

3. Descriptive Geometry. Second semester. 3 h.

The course covers the orthographic projection of points, lines, planes, warped surfaces, etc., in the four angles of projection. Care is exercised to train the student to handle the figures in space rather than on the drawing, at the same time securing correct execution of the drawing.

Text-book: Phillips and Millar's Descriptive Geometry.

Prerequisite: Draw. 1.

4. Free-Hand Drawing. First semester. 2 h. Open to students in all departments.

A course which includes lectures on the principles of free-hand perspective, practice drawing from models and casts, and assigned reading.

ENGINEERING MATHEMATICS

1. Algebra. First semester. 3 h.

On account of the differences in preparation of students entering from widely separated high schools, the course begins with a review of surds and imaginaries, quadratic equations, and logarithms. This review is completed by the time logarithms are needed in trigonometry. After this follows a thorough drill in the algebraic principles that the students will need in analytic geometry, calculus and in the applications to practical engineering. Particular emphasis is placed on graphic methods.

Text-book: Rietz and Crathorne's College Algebra.

2. Trigonometry. First semester. 2 h.

This is in the main a conventional course in trigonometry. Considerable attention is given to graphic methods. A knowledge of logarithms is assumed. At the beginning of the semester an examination covering plane trigonometry and the right spherical triangle will be given for those who desire advanced standing in the course.

Text-book: Phillips and Strong's Plane and Spherical Trigonometry.

Tables: Lyman and Goddard's Computation Tables.

3. Analytical Geometry. Second semester. 5 h.

The aim is to familiarize the student with analytical methods of investigation. Special emphasis is placed upon the use of algebraic processes as a means of demonstrating geometric properties of loci. In addition to a study of the properties of conics, the transformation of co-ordinates and the general equation of the second degree are taken up. To this are added brief chapters on solid analytic geometry and higher plane curves.

Text-book: Rigg's Analytic Geometry.

Prerequisite: Eng. Math. 1 and 2.

4. Differential Calculus. First semester. 5 h.

After the student becomes able to differentiate a given function with ease and accuracy, applications are taken up to problems in maxima and minima, expansions of functions in series, evaluation of indeterminate forms, radii and centers of curvature and curve tracing.

Text-book: Townsend and Goodenough's Essentials of Calculus.

Prerequisite: Eng. Math. 3.

5. Integral Calculus. Second semester. 5 h.

In this course the standard methods of integration are taken up, together with application to areas, volumes, rectification of curves, center of mass, moments of inertia, radius of gyration, and many practical engineering problems. A chapter on the elementary methods of integrating ordinary differential equations is included.

Text-book: Townsend and Goodenough's Essentials of Calculus.

Prerequisite: Eng. Math. 4.

6. Geodesy and Least Squares. Second semester. 2 h.

This course covers the principles of triangulation, angle measurement, geodetic surveying, astronomical determination, etc., and also the theory of probability, adjustment of observations, precision of observations, functions of observed quantities, probable error, mean error, constant errors, solution of normal equations, and the application of the method of least squares to geodetic and astronomical operations and to other experimental data.

Text-book: Ingram's Geodetic Surveying.

Prerequisite: Eng. Math. 5, and C. E. 2.

7. Differential Equations. Second semester. 3 h.

Text-book: Murray's Introductory Course in Differential Equations.

Prerequisite: Eng. Math. 5.

LANGUAGES IN COLLEGE OF ENGINEERING

ENGLISH.

1. Engineering Rhetoric. First semester. 2 h.

A course in composition and rhetoric arranged with special reference to the needs of engineering students.

2. ENGINEERING RHETORIC. Second semester. 2 h.
Continuation of Course 1.
Summer reading: In addition to the reading in the above courses students are required to do a prescribed amount of reading during the summer vacations following the freshman, sophomore, and junior years. The required lists of books are printed in a supplementary pamphlet.

GERMAN.

3. ENGINEERING GERMAN. First semester. 3 h.
The course is designed to give a practical, scientific German vocabulary, as well as an ability to read rapidly ordinary scientific material. It will include chemistry, physics, and geology as given in the text-book, with supplementary selections from current engineering magazines.
Text-book: Blochman's Scientific German.
Prerequisite: two years of high-school German.

4. ENGINEERING GERMAN. Second semester. 3 h.
A continuation of Course 3.
Text-book: Helmholtz's Populäre Vorträge.
Prerequisite: German 3.

FRENCH.

5. ENGINEERING FRENCH. First semester. 3 h.
A course in grammar, pronunciation, composition, and sight-reading.
Text-books: Fraser and Squair's French Grammar; Super's French Reader.

6. ENGINEERING FRENCH. Second semester. 3 h.
A course in reading scientific French.
Text-books: Bowen's First Scientific French Reader; Herdler's Scientific French Reader; Luquiens' Popular Science.
Prerequisite: French 5.

SPANISH.

7. ENGINEERING SPANISH. First semester. 3 h.
A course in grammar, pronunciation, composition, and sight-reading.
Text-book: Giese's First Spanish Book and Reader.

8. Engineering Spanish. Second semester. 3 h.

A continuation of Course 7 covering prose composition modern Spanish fiction and plays, and selections from scientific Spanish.

Text-book: Bouilla's Spanish Daily Life, and selections of scientific Spanish.

Prerequisite: Spanish 7.

SCHOOL OF MEDICINE

*FACULTY

James H. Baker, M. A., LL.D., President.
William P. Harlow, B.A., M.D., Dean.
James R. Arneill, B.A., M.D., *Denver*, Professor of Medicine, (Clinical Medicine).
William C. Bane, M.D., *Denver*, Professor of Oto-laryngology.
Melville Black, M.D., *Denver*, Professor of Ophthalmology.
Sherman G. Bonney, M.A., M.D., *Denver*, Professor of Medicine.
Clough T. Burnett, M.D., *Boulder*, Professor of Bacteriology.
T. Mitchell Burns, M.D., *Denver*, Professor of Obstetrics.
F. Gillett Byles, M.A., M. D., *Denver*, Professor of Hygiene.
George H. Cattermole, M.D., *Boulder*, Professor of Medicine (Pediatrics).
John Chase, B.A., M.D., *Denver*, Professor of Ophthalmology and Otology.
Samuel B. Childs, B.A., M.D., *Denver*, Professor of Roentgenology.
David H. Coover, M.D., *Denver*, Professor of Ophthalmology.
Richard W. Corwin, M.D., LL.D., *Pueblo*, Professor of Surgery.
William B. Craig, M.D., *Denver*, Professor of Surgery.
William H. Davis, M.D., *Denver*, Professor of Dermatology and Genito-Urinary Diseases.
John Bernard Ekeley, Ph.D., Sc.D., *Boulder*, Professor of Chemistry.
Charles S. Elder, M.D., *Denver*, Professor of Surgery (Gynecology).
John M. Foster, M.D., *Denver*, Professor of Oto-laryngology.
Leonard Freeman, B.S., M.A., M.D., *Denver*, Professor of Surgery.
Luman M. Giffin, M.D., *Boulder*, Professor of Surgery.
Oscar M. Gilbert, M.D., *Boulder*, Professor of Medicine (Clinical Medicine).
Carbon Gillaspie, M.D., *Boulder*, Professor of Anatomy.
Josiah N. Hall, B.S., M.D., *Denver*, Professor of Medicine.
Horace G. Harvey, B.A., M.D., *Denver*, Professor of Surgery.
*Joseph C. Hutchison, M.S., M.D., *Denver*, Professor of Obstetrics.
Edward Jackson, M.A., M.D., *Denver*, Professor of Ophthalmology.

---

*Arranged alphabetically—professors, assistant professors, lecturers, instructors, assistants—without reference to length of service.

*Died, July 9, 1912.

WALTER A. JAYNE, M.D., *Denver*, Professor of Surgery (Gynecology and Abdominal Surgery).

MOSES KLEINER, M.D., *Denver*, Professor of Therapeutics.

ROBERT LEVY, M.D., *Denver*, Professor of Oto-laryngology.

CHARLES B. LYMAN, M.D., *Denver*, Professor of Surgery.

FRANCIS H. MCNAUGHT, M.D., *Denver*, Professor of Obstetrics.

ARTHUR J. MARKLEY, D.D.S., M.D., *Denver*, Professor of Dermatology.

WILLIAM C. MITCHELL, M.D., *Denver*, Professor of Bacteriology.

GEORGE E. NEUHAUS, M.D., *Denver*, Professor of Neurology and Psychiatry.

GEORGE B. PACKARD, M.D., *Denver*, Professor of Surgery (Orthopedics).

ALVIN R. PEEBLES, M.D., *Boulder*, Professor of Preventive and Experimental Medicine.

HOWELL T. PERSHING, M.S., M.D., LL.D., *Denver*, Professor of Neurology and Psychiatry.

JAMES H. PERSHING, B.A., *Denver*, Professor of Medical Jurisprudence.

CHARLES A. POWERS, M.A., M.D., *Denver*, Professor of Surgery (Clinical Surgery).

E. BARBER QUEAL, M.D., *Boulder*, Professor of Physiology.

EDMUND J. A. ROGERS, M.A., M.D., *Denver*, Professor of Surgery.

WILLIAM J. ROTHWELL, M.D., *Denver*, Professor of Medicine.

HENRY SEWALL, Ph.D., M.D., *Denver*, Professor of Medicine.

WILLIAM H. SHARPLEY, M.D., *Denver*, Professor of Medicine (Contagious Diseases).

CHARLES F. SHOLLENBERGER, M.D., *Denver*, Professor of Medicine (Pediatrics).

GEORGE H. STOVER, M.D., *Denver*, Professor of Roentgenology.

THOMAS E. TAYLOR, B.A., M.D., *Denver*, Professor of Obstetrics.

JAMES C. TODD, B.Ph., M.D., *Secretary at Boulder*, Professor of Pathology.

CHARLES B. VAN ZANT, M.D., *Denver*, Professor of Physiology.

HOMER C. WASHBURN, B.S., Ph.C., *Boulder*, Professor of Pharmacy.

RUSS C. WHITMAN, B.A., M.D., *Secretary at Denver*, Professor of Serology and Surgical Pathology.

HERBERT B. WHITNEY, B.A., M.D., *Denver*, Professor of Medicine (Pediatrics).

NEWTON WIEST, M.D., *Denver*, Professor of Dermatology.

Frost C. Buchtel, M.D., *Denver*, Assistant Professor of Surgery.
Jacob Campbell, M.D., *Boulder*, Assistant Professor of Surgery.
Edward F. Dean, M.D., *Denver*, Assistant Professor of Surgery (Clinical Surgery).
Walter W. Reed, M.D., *Boulder*, Assistant Professor of Obstetrics.
Aubrey H. Williams, M.D., *Denver*, Assistant Professor of Surgery (Clinical Surgery).
Edward Delehanty, M.D., *Denver*, Lecturer on Neurology.
Oliver Lyons, M.D., *Denver*, Lecturer on Genito-Urinary Diseases.
Alfred R. Seebass, Ph.G., M.D., *Denver*, Lecturer on Life Insurance Examinations.
John W. Amesse, M.D., *Denver*, Instructor in Medicine.
*Henry S. Denison, B.A., M.D., *Denver*, Instructor in Medicine.
Clay E. Giffin, B.A., M.D., *Boulder*, Instructor in Surgery.
Philip Hillkowitz, B.S., M.D., *Denver*, Instructor in Medicine (Serum Therapy).
Clarence B. Ingraham, B.Ph. M.D., *Denver*, Instructor in Obstetrics.
Tracy R. Love, B.Ph., M.D., *Denver*, Instructor in Physiology and Pharmacology.
Frank R. Spencer, B.A., M.D., *Boulder*, Instructor in Ophthalmology and Oto-laryngology.
Edward B. Trovillion, M.D., *Boulder*, Instructor in Anatomy.
Constantine F. Kemper, B.A., *Boulder*, Assistant in Bacteriology.
Edith K. Ross, *Boulder*, Assistant in Pathology.
Thomas F. Walker, M.D., *Denver*, Assistant in Pathology.

MEDICAL SENATE

William P. Harlow, *Dean, Chairman.*
James R. Arneill.
John B. Ekeley.
Charles S. Elder.
Edward Jackson.
Robert Levy.
Charles B. Lyman.
Arthur J. Markley.
George E. Neuhaus.
Alvin R. Peebles.
E. Barber Queal.
James C. Todd.
Ross C. Whitman, *Secretary.*

*Died, August 24, 1912.

HOSPITAL AND DISPENSARY STAFF

MEDICINE

PROFESSORS.

James R. Arneill.
Josiah N. Hall.
Henry Sewall.
William H. Sharpley.
Charles B. Van Zant.
Herbert B. Whitney.

DOCTORS.

John W. Amesse.
Albert J. Argall.
Rudolph W. Arndt.
Amos L. Beaghler.
Ida Valeria Beers.
Wilson C. Birkenmayer.
F. Ross Coffman.
Frank P. Gengenbach.
Ranulph Hudston.
William Wiley Jones.
Samuel H. Kestenbaum.
Tracy R. Love.
Charles N. Meader.
George K. Olmsted.
William H. Peltier.
Russell T. Ramsey.
L. Huber Schultz.
Harry S. Shafer.
Adam J. Simpson.
C. J. Wiechelman.
Louis C. Wollenweber.

NEUROLOGY

PROFESSOR.

George E. Neuhaus.

DOCTORS.

Edward Delehanty.
Bernard C. Dorset.
Edward W. Lazell.
Cyrus L. Pershing.

SURGERY

PROFESSORS.

William B. Craig.
Edward F. Dean.
Leonard Freeman.
Charles B. Lyman.
George B. Packard.
Charles A. Powers.
Edmund J. A. Rogers.
Aubrey H. Williams.

DOCTORS.

FROST C. BUCHTEL.
ALEXANDER C. CRAIG.
HAROLD G. GARWOOD.
JOHN C. HERRICK.
S. FOSDICK JONES.
OSCAR M. SHERE.
NATHANIEL A. THOMPSON.
HENRY W. WILCOX.

GYNECOLOGY

PROFESSORS.

CHARLES S. ELDER.
WALTER A. JAYNE.

DOCTORS.

M. ETHEL V. FRASER.
CLARENCE B. INGRAHAM.
SAMUEL M. OPPENHEIM.
MARY REED STRATTON.

OBSTETRICS

PROFESSORS.

T. MITCHELL BURNS.
CHARLES S. ELDER.

DOCTORS.

IDA VALERIA BEERS.
AGNES M. DITSON.
CHARLES A. FERRIS.
CLARENCE B. INGRAHAM.
GEORGE L. MONSON.
FRANK W. STAHL.

OPHTHALMOLOGY

PROFESSORS.

JOHN CHASE.
DAVID H. COOVER.
EDWARD JACKSON.

DOCTORS.

WILLIAM H. CRISP.
JOHN A. MCCAW.
WILLIAM A. SEDWICK.
HIRAM R. STILWILL.

OTO-LARYNGOLOGY

PROFESSORS.

WILLIAM C. BANE.
JOHN M. FOSTER.
ROBERT LEVY.

DOCTORS.

Hugo Aufmwasser.
Thomas E. Carmody.
Edward Welles Collins.
Claud E. Cooper.
Elsie Seelye Pratt.
Orville D. Westcott.

DERMATOLOGY AND GENITO-URINARY DISEASES

PROFESSORS.

William H. Davis.
Arthur J. Markley.
Newton Wiest.

DOCTORS.

John B. Davis.
Oliver Lyons.

DISEASES OF THE RECTUM

DOCTOR.

Arthur H. Earley.

GENERAL STATEMENT

HISTORICAL NOTE

The University of Colorado School of Medicine was opened in September, 1883. The School has kept fully abreast with the rapidly increasing demands of modern educational methods. Special stress has always been laid on thorough instruction in the fundamental branches embraced in the curriculum of the first two years of the course, without which mastery of the remainder of the curriculum is impossible. The entire curriculum has recently been completely revised and modernized. On January 1, 1911, the Denver and Gross College of Medicine was united with this School, the two faculties being combined into one. The single school thus formed is an integral part of the University of Colorado. At the same time the third and fourth-year classes were transferred to Denver, where greatly enlarged clinical facilities are available. The Denver and Gross College of Medicine was the union June 19, 1902, of the Denver College of Medicine, a department of the University of Denver, and the Gross Medical College. The former College was opened November, 1881, and the latter in 1887.

The first two years constitute the Boulder Division of the School and the last two years the Denver Division.

The third and fourth-year students, respectively, spend two and four hours daily in clinical work. The School is a member of the Association of American Medical Colleges.

EQUIPMENT IN BOULDER

BUILDINGS.

Medical Building—The Medical Building is a two-story brick structure with three one-story wings, located at the southwest corner of the campus. It affords class rooms for lecture and recitation purposes, two large laboratories with abundant light on three sides, store rooms, general offices, and private laboratories for members of the faculty, and for advanced and graduate work.

Anatomy Building—This building was erected in 1908. It contains a large dissecting room, cloak room, an embalming room, and refrigerating plant capable of accommodating about thirty-five cadavers.

PHARMACY BUILDING—This is a two-story brick building, well equipped for its purpose.

CHEMISTRY BUILDING—The Chemistry Building is located near the center of the campus. It is a two-story brick building, constructed with special reference to the teaching of chemistry, and devoted entirely to that purpose. It contains two large lecture rooms, and six laboratories, with abundant equipment for every kind of chemical work, reading rooms, private laboratories, stock rooms, balance room, chemical museum, etc.

HOSPITAL—The Hospital was erected during the summer of 1898, and was dedicated November 19th of that year. The building is located on a high bluff adjacent to the campus and overlooking the city of Boulder and the great plains, and affords a beautiful view of the foothills and Arapahoe Peaks in the distance. It contains accommodations for forty patients, in wards and private rooms.

NURSES' HOME—The Nurses' Home is an eight-room, one-story frame cottage, situated west of the Hospital and near the latter.

LIBRARY—The University Library contains 66,787 bound volumes, and 35,000 pamphlets. The medical library, consisting of 3,200 bound volumes together with fifty of the more important American and foreign medical periodicals, is segregated in a separate reading room. Students have direct access to the shelves.

The medical books of the Henry S. Denison Research Laboratory, with a special card catalogue, are deposited in the Medical Building.

LABORATORIES.

The Laboratory of Anatomy is situated in the Anatomy Building. In addition to abundant material for dissections, it contains a valuable collection of mounted preparations, skeletons, charts, models, etc., which is accessible to the students, under proper supervision, for use in connection with the work of the department.

Histology and Embryology are taught in the east wing of the Medical Building. The laboratory is provided with compound microscopes, microtomes, thermostat, models, projection lantern, and other necessary equipment.

The Laboratory of Pathology is a large room in the Medical Building, lighted on three sides. It is equipped with Leitz microscopes, the various types of microtome, of which two are provided

for the use of students, and all reagents, stains, etc., needed for thorough examination of material according to the most modern methods. Accommodations are afforded for research work, and every encouragement is offered to students to undertake work of this character. The Pathological Museum is already quite extensive, and further material derived from operations, post mortem examinations, and from other sources, is being constantly added.

The course in Bacteriology is conducted in one of the large laboratories in the Medical Building. During the past few years a large amount of new and valuable equipment has been added, and the laboratory is fully equipped for teaching this branch under the most favorable conditions. The equipment includes an ample number of Leitz microscopes with oil immersion lenses; a complete equipment of sterilizers; a large incubating room, affording a separate incubator for each student; an abundance of glassware, and special apparatus for bacteriological examinations of air, water, soil, milk, food, etc. Convenient to the laboratory are the animal rooms, with a supply of animals for experimental purposes.

The courses in chemistry for the medical students are given in the Chemistry Building, which is situated conveniently near to the Medical Building.

The equipment for the laboratory work in Physiology and Pharmacology is modern and complete. It is contained in the West Laboratory.

Clinical Diagnosis is taught in the Laboratory of Pathology. There is a complete equipment of clinical laboratory apparatus and an excellent collection of prepared material, together with books, atlases, and photomicrographs, to which students have constant access.

EQUIPMENT IN DENVER

BUILDING.

Medical Building and Dispensary—This is a three-story and basement building at the corner of Thirteenth and Welton Streets. It contains two lecture rooms, laboratories for work in pathology and the various branches of clinical diagnosis, smaller rooms for section and demonstration work, and rooms for the several depart-

ments of the Dispensary. The building is exceptionally well located for its purpose.

CLINICS.

A course is given at Boulder in operative surgery on the cadaver and dog. In Denver, operative and bedside clinics, clinical conferences and ward-walks are held daily at the Denver City and County Hospital, 400 beds; the Faculty has, through the courtesy of the Commissioner, a very large representation on the attending staff. The Hospital clinics are so arranged that small groups of students have an opportunity to study and observe the cases intimately, under the direction of the proper members of the faculty. The School also maintains a dispensary where daily clinics are attended by small groups of students in Medicine, Neurology, Surgery, Gynecology, Orthopedics, Eye Ear, Nose and Throat, and in Dermatology and Genito-Urinary Surgery. There were more than 20,000 visits to the Dispensary in 1912. In addition to these, clinics are held for small groups of students at St. Luke's Hospital, 100 beds; St. Anthony's Hospital, 200 beds; St. Joseph's Hospital, 200 beds; Mercy Hospital, 125 beds; the Woman's Hospital; the National Jewish Hospital for Consumptives; the State Home for Dependent Children; and the Contagious (Steele) Hospital.

There is abundant material for teaching obstetrics, each member of the senior class being required to personally attend a minimum of ten cases, in addition to seeing cases delivered by members of the faculty. Students who desire to do so may attend a much larger number of cases.

The faculty believes that the greatest benefit from clinics can only be obtained for the students by bringing them into the closest possible touch with the patients. In accordance with this belief the clinics at the Dispensary are conducted as "clinical conferences," whereby the students examine and treat the patients exactly as if they were their own private cases, assist at, and perform operations, administer anæsthetics, and superintend the after-treatment of surgical cases.

LIBRARY FACILITIES.

In the office there are several cases of medical books for immediate reference. The faculty and students have free access to the recently combined libraries of The Denver Academy of Medicine and The Denver County Medical Society contained in the rooms

of the latter in the Metropolitan Building, and the Medical Section of the Denver City Library. The former contains 7,000 volumes and 160 current medical periodicals.

THE EDWARD G. STOIBER SCHOLARSHIP

The Edward G. Stoiber Scholarship Fund consists of the principal sum of $2,000 held in trust, the income of which is to be given each year to some student in the School of Medicine, designated by the donor or by the officers of the School. This scholarship was established in The Denver and Gross College of Medicine by Mrs. Edward G. Stoiber (now Mrs. Hugh R. Rood) in memory of the late Edward G. Stoiber. Under the terms of the merger agreement between The Denver and Gross College and the University of Colorado this fund has been transferred to the Regents, to be held in perpetuity for the purposes specified.

SESSION OF 1913--1914

The next term begins September 8, 1913.

Applicants for admission are urged to see that their entrance credentials are in the hands of the Secretary on or before September 5, 1913, in order that these may be examined and passed upon in advance of registration.

For general information, address the Registrar, Fred E. Hagen, Boulder; for special medical information, address the Secretary of the First and Second-Year Division, James C. Todd, M.D., Boulder, or the Secretary of the Third and Fourth-Year Division, Ross C. Whitman, M.D., Denver, or the Dean, William P. Harlow, M.D., Boulder.

REQUIREMENTS FOR ADMISSION

Two years of college work, estimated at sixty semester hours, and based upon a four-year high-school preparation, are required for admission. The following subjects are prescribed: At least one year of Latin, one year of high-school or college biology, one year of high-school or college physics, one year of college chemistry.

All candidates for admission should present a certificate of good character from two physicians in the state in which they last resided.

Students are earnestly advised to be present at the opening of

the session. For the session of 1913-1914 no student will be allowed to enter later than Monday, September 22, 1913.

ADVANCED STANDING

Candidates, from a medical college on the accepted list, who desire advanced standing in medical subjects, must present satisfactory credentials to the Dean or Secretary of the Medical School at the time of matriculation.

COURSES LEADING TO TWO DEGREES

A seven-year course leading to the degrees of B.A., and M.D., is offered. The student pursues the regular work of the College of Liberal Arts for three years and then begins his medical studies. The B.A. degree is conferred upon the completion of the first year of Medicine.

REQUIREMENTS FOR A DEGREE

Every candidate for the degree of Doctor of Medicine must be twenty-one years of age, possess a good moral character, and be of temperate habits. He must have passed satisfactory examinations in all the required studies included in the full course of instruction. He must have attended regularly four full courses of lectures of not less than thirty-two weeks each, in some accredited medical college. No two of such courses shall have been taken in the same year. The last course shall be taken in this School. An allowance for absence will be made for no other cause than the illness of the student or of his immediate family, and such absence from any course must not exceed twenty percentum of the scheduled hours. A thesis acceptable to the faculty must be presented before graduation.

FEES

For fees, see page 52.

*DESCRIPTION OF COURSES

FIRST YEAR (AT BOULDER)

ANATOMY AND EMBRYOLOGY

PROFESSOR GILLASPIE AND DOCTOR TROVILLION:—

Anatomy is taught by means of lectures, recitations, drawings, and demonstrations upon the cadaver. Work in the dissecting room is prosecuted under the personal supervision of the professor and demonstrators of anatomy. Every facility and encouragement is given the student in the anatomical room to pursue work beyond the requirements of the prescribed course. The anatomical material is furnished free.

1. OSTEOLOGY AND DISSECTION. First semester. 4 h. Daily. 256 a.

The first hour is used for recitations on osteology and the work done in dissection. The other three hours are spent in the dissecting room. During this time the students are required to dissect one lateral half of the body under the direct supervision of the Professor of Anatomy and assistants. Osteology is taught along with the dissection by means of recitations on the bones of the parts the students are at that time dissecting. Frequent oral and written quizzes are held.

Professor Gillaspie and Doctor Trovillion.

2. ANATOMY OF THE CENTRAL NERVOUS SYSTEM. Second semester. 64 h.

Lectures, recitations, demonstrations and dissections of the brain and cord.

Students are required to dissect the brain and cord and to demonstrate the gross anatomy from their dissections. Drawings of the dissections are also made.

The principal fiber tracts are followed from the cord to the cortex and from the cortex to the cord by means of charts, lantern slides, and microscopic sections.

Professor Gillaspie.

*The hours indicated after each course show the total time devoted to the course.

3. Regional Anatomy. Second semester. 64 h.
In this course the different regions are studied by means of cross sections and special dissections. Careful attention is given to the relation of parts. In this way the students get a complete review of the work done during the first semester.
Professor Gillaspie.

4. Embryology. First semester. 30 h.
Lectures and recitations.
Professor Gillaspie.

5. Embryology. First semester. 60 h.
Laboratory.
Professor Gillaspie.

Text-books: Anatomy, Piersol, Gray, Cunningham, Morris, Heisler's Practical Anatomy, Emil Villiger's Brain and Spinal Cord; Embryology, Bailey and Miller, Heisler, McMurrich.

Collateral reading: Anatomy, Sobotta-McMurrich, Spalteholz, Toldt, Eycleshymer and Schoemaker's Cross Section Anatomy; Embryology, Lillie on the Chick, Minot's Laboratory Manual and Human Embryology, Keibel and Mall.

CHEMISTRY

Professor Ekeley:—

1. Organic Chemistry. Second semester. 64 h.
The lecture course covers the different classes of organic compounds, with discussions of structural formulæ, and familiarizes the student with the important representatives of each group.
Professor Ekeley.

2. Organic Chemistry. Second semester. 80 h.
The course consists of laboratory exercises, in which the student obtains a first-hand knowledge of the compounds discussed in the lectures.
Professor Ekeley and Assistants.

HISTOLOGY

Professor Todd:—

1. Histology. First semester, ten weeks. 40 h.
Lectures and recitations.
The course includes a thorough study of the cells, tissues, and

organs of the human body in relation to their structure. The origin of the various organs in the embryo is discussed as a means to interpretation of their structure. The lectures are illustrated by lantern slides.

2. Histology. First semester, ten weeks. 110 h.
Laboratory.
In addition to the study of the various types of cells and tissues in the fresh state, the student mounts and studies about one hundred and fifty sections which are given out ready-stained. Careful drawings of the more important of these are required and are inspected weekly. Before each laboratory period the sections assigned for the day are demonstrated by means of the micro-projection apparatus which is installed in a room adjacent to the laboratory. A "library" of reference and demonstration slides has been prepared and is used for frequent demonstrations and practical examinations. Several lecture and laboratory periods are devoted to the principles of microscopy. Instruction is also given in elementary histologic technique.
Text-book: Stohr.
Reference books: Schäfer, Bailey, Piersol.

BACTERIOLOGY

Professor Burnett:—

1. General Bacteriology. First semester. 32 h.
Lectures and recitations.
Professor Burnett.
Text-book: Hiss and Zinsser.
Reference books: Park's Pathogenic Bacteria and Protozoa, Jordan's Text-Book of Bacteriology, Abbott's Principles of Bacteriology, $3.75; William's Bacteriology, Ricketts' Immunity, Chester's Manual of Determinative Bacteriology, Eyre's Bacteriological Technique, etc.

2. Practical Bacteriology. Second semester, eight weeks. 120 h.
The course is divided into two main portions. In the first part the student is instructed in the methods of bacteriologic technique and in the general principles of bacteriology. Many of the non-pathogenic bacteria are studied in the early part of the work. As soon as the student has studied a sufficient number of non-pathogenic micro-organisms a more detailed study of

the pathogenic bacteria is entered upon. Much of this work is accompanied by animal experiments. In the latter part of the course some time is given to water and milk analysis. Each student is required to work out and identify a number of organisms given out as unknowns.

Professor Burnett and Assistant.

PHYSIOLOGY

Professor Queal:—

1. Physiology. Second semester. 80 h.

Recitations on assigned subjects, with a limited amount of explanatory lecture.

The course covers the subjects of general and cellular physiology, physiology of nerve and muscle, central nervous system, blood, lymph, circulation, and respiration.

Text-book: Howell.

Reference books: Starling, Tigerstedt.

MATERIA MEDICA

Professor Washburn:—

1. Materia Medica. Second semester. 32 h.

Lectures and recitations.

A study of the more important drugs, both organic and inorganic, in present use. In this course the various drugs are grouped according to their therapeutic uses, and special attention is given to their preparations and dosage.

SECOND YEAR (AT BOULDER)

ANATOMY

Professor Gillaspie:—

1. Surgical Anatomy. Throughout the year. 96 h.

In this course the students review carefully the anatomy of each part and learn its application to surgery. Special attention is given to the chest and abdomen; the female pelvis, both bones and soft parts, are studied in their relation to obstetrics. In the second semester a head is dissected with especial reference to the eye, ear, nose, and throat.

Text-books: Campbell's Surgical Anatomy, Davis' Applied Anatomy, Treve's Applied Anatomy.

2. Anatomy of the Central Nervous System and Special Sense Organs. Second semester. 48 h.

This is an elective course offered to psychology students. In this course the nervous system is studied by means of lectures and dissections of the brain and cord.

BACTERIOLOGY

Professor Burnett:—

1. Advanced Bacteriology. Second semester.

This is an optional course and is open only to a limited number of students, who have completed the courses in General Bacteriology and Practical Bacteriology given in the first year.

The course deals especially with such problems of advanced bacteriology as determination of efficiency of antiseptics and disinfectants and bacteriologic examination of water, milk and foods. To such students as are qualified are assigned special problems for investigation.

PHYSIOLOGY

Professors Peebles and Queal, and Doctor Love:—

1. Physiology. First semester. 80 h.

Lectures and recitations.

The course includes the physiology of digestion and nutrition, secretion, heat production, and regulation, the special senses and reproduction.

Text-book: Howell.

Reference books: Starling, Tigerstedt.

2. Physiology. First semester, eight weeks. 120 h.

This course consists of practical laboratory exercises in which the student demonstrates for himself the physiological phenomena governing striated, non-striated, and heart muscle; physiology of nerve and muscle; the central nervous system; special senses; circulation and respiration; digestion; internal secretions; hormones; etc. The work is done upon man and animals, and is supplemented by demonstrations by the instructor.

Professor Peebles and Doctor Love.

Text-books: Cannon's Laboratory Manual, $2.25; Lombard's Laboratory Manual, $1.50.

PHARMACOLOGY

Professor Peebles and Doctor Love:—

1. Pharmacology. Throughout the year. 64 h.
Recitations.
A systematic quiz course covering the materia medica, physiological actions, toxicology and therapeutic uses of the most important drugs. Prescription writing is insisted upon throughout the course.
Text-book: Cushny, $3.75.
Reference books: Sollmann, $4.00; Wood, $5.00; Hare, $4.00.

2. Pharmacology. First semester, eight weeks. 120 h.
Laboratory.
The above course consists of laboratory exercises performed by the student and of demonstrations by the instructors. The physiological actions of the most important drugs are studied upon animals. Graphic methods are employed where possible and the student is required to interpret and explain his curves. The course is planned to cover the action of drugs upon the central nervous, respiratory, cardio-vascular, renal and digestive systems. The toxicology is studied and each student is required to recover and determine the poison from the tissues of two poisoned animals.
Text-book: Cushny and Edmunds' Laboratory Manual.

CHEMISTRY

Professor Ekeley and Mr. Dean:—

1. Physiological Chemistry. First semester. 40 h.
The recitations are designed to review and clarify the work of the laboratory course next described.
Mr. Dean.

2. Physiological Chemistry. First semester. 80 h.
After a review in the laboratory of the chemistry of the carbohydrates, fats, proteids, and of the salivary, gastric, and intestinal digestion, etc., the student is made familiar with the various tests used in clinical medicine, by means of practical tests on unknowns furnished by the instructor.
Mr. Dean.
Text-book: Hawk, $3.00.

HYGIENE

PROFESSOR PEEBLES:—

1. LECTURES AND QUIZZES. Throughout the year. 64 h.

PATHOLOGY

PROFESSOR TODD:—

1. GENERAL PATHOLOGY. Throughout the year. 64 h.

Lectures and recitations based on assigned portions of Adami and McCrae's text.

Students are required to write reviews of the literature upon various subjects of pathologic interest.

2. PATHOLOGY. Second semester, eight weeks. 120 h.

Laboratory.

Sections of tissue are given out to the class as unknowns, to be mounted, studied, described, and diagnosed. Approximately 200 specimens illustrating various microscopic lesions and tumors are studied in this way, and at the end of the course the student is required to hand in drawings and full written descriptions of all these. Whenever possible, gross specimens illustrating the lesions under consideration are demonstrated.

3. SPECIAL WORK. Second semester.

To such students as desire it, opportunity is given for more advanced work in pathologic technique, microscopic diagnosis, photo-micrography, etc. Students are likewise encouraged to take up some simple research problem.

Text-book: Adami and McCrea, $5.00.

Reference books: Ziegler, Stengel, Delafield and Prudden, Gaylord and Aschoff, Dürck's Atlases.

CLINICAL DIAGNOSIS

PROFESSOR TODD:—

1. RECITATION AND LABORATORY COURSE. Second semester. 80 h.

In this course are considered the numerous laboratory methods which are of value in clinical medicine, including examinations of sputum, blood, urine, stomach contents, feces, and the various pathological secretions and excretions. The relation between laboratory findings and the pathology of the disease is constantly emphasized. Especial attention is given to technique.

Fresh material for the laboratory exercises is furnished by the University Hospital at Boulder and the City and County Hospital at Denver. There is an excellent collection of prepared material, illustrating especially the rarer blood diseases and animal parasites. Students have constant access to photomicrographs, atlases, and reference books.

Text-book: Todd, $2.25.

Reference books: Simon, Emerson, Rieder's Atlas of Urinary Sediments, Jacob's Atlas of Clinical Diagnosis, Schleip's Atlas of Hematology.

PHYSICAL DIAGNOSIS

Professor Gilbert:—

1. Normal Physical Diagnosis. Second semester. 48 h.

This is an optional course for students who have advanced credit in other subjects.

Text-books: Cabot, Sahli.

SURGERY

Professor L. M. Giffin, Assistant Professor Campbell, and Doctor Clay E. Giffin:—

1. Principles of Surgery. First semester. 32 h.

Lectures and recitations.

This course includes wounds, the principles of the healing of wounds, inflammation, the action of pathogenic bacteria, necrosis, suppuration, ulceration, septicæmia, pyæmia, erysipelas, surgical tuberculosis, and bandaging.

Professor L. M. Giffin and Doctor Clay E. Giffin.

2. Dog and Cadaver Surgery. Second semester. 96 h.

The various standard operations are performed upon dogs and the cadaver. Assistant Professor Campbell.

THIRD YEAR (AT DENVER)

Attention is directed to the elective courses scheduled under the departments of Medicine, Neurology, and Pathology. Third-year students are required to elect at least two of these courses in each semester.

MEDICINE AND THERAPEUTICS

Professors Kleiner, Peebles, Shollenberger, Sewall, Stover, Van Zant, and Whitney, and Doctors Amesse, Arndt, and Jones:—

1. Theory and Practice. Throughout the year. 32 h.
This is a lecture course in which the principles of medicine are dealt with. It is continuous with the corresponding course given in the fourth year. Professor Peebles.

2. Quiz Course. Throughout the year. 128 h.
This is a systematic quiz course, in which the ground of internal medicine is covered in recitations based on assigned portions of a standard text. Doctors Amesse and Jones.

3. Pediatrics. Throughout the year. 32 h.
Lectures and recitations.
Infant feeding and the important diseases of infancy and childhood are covered.
Professors Shollenberger and Whitney.

4. Clinical Therapeutics. Throughout the year. 32 h.
This is a lecture and quiz course dealing with drug therapeutics, as distinct from materia medica and pharmacology.
Professor Kleiner.

5. Physical Diagnosis. Eight weeeks. 60 h.
Small groups of students are given practical training in methods of examination, and in the recognition of abnormal signs, together with lectures and recitations on the interpretation of these. Material is furnished by the Dispensary and the City and County Hospital. Doctor Arndt.

6. Diagnostic Methods. Second semester. 16 h. Elective.
Lectures and demonstrations covering the use of the newer diagnostic instruments, the interpretation of pulse and respiratory curves, etc. Professor Sewall.

7. Pathological Physiology. First semester. 16 h. Elective.
Lectures covering the field of perverted action and function of diseased organs. Professor Van Zant.

8. X-Ray. First semester. 16 h. Elective.
Lectures and demonstrations covering the technique of the therapeutic and diagnostic use of the X-Ray, and the interpretation of skiagrams. Professor Stover.

9. History of Medicine. Both semesters. 32 h. Elective.

Lectures on important epochs and individuals in the history of medicine. Professor Elder.

Text-books: Osler, Edwards, Anders, $5.50; Cabot, $3.50.

Reference books: Albutt's System, Osler's Modern Medicine, Nothnagel's Encyclopedia of Practical Medicine (American Edition), Forcheimer's The Prophylaxis and Treatment of Internal Diseases, Da Costa, Wilson, Current Medical Literature.

NEUROLOGY

Professor Neuhaus, and Doctors Lazell and Cyrus W. Pershing:—

1. Principles of Neurology. Throughout the year. 32 h.

The lectures cover a review of the anatomy and physiology of the central nervous system, the symptomatology of these regions, methods of case taking, the examination of patients, etc. Professor Neuhaus.

2. Demonstration Course. Eight weeks. 60 h.

The course consists in practical exercises in the examination of patients, making of physical examinations from the neurological point of view, with drill in the physiological interpretation of neurological signs and symptoms, and includes instruction in the application of electricity in its various forms to diagnosis and therapeutics.

Doctors Lazell and Pershing.

3. Pathological Psychology. As arranged. 16 h. Elective.

The lectures deal with the principles involved in psychanalysis and the application of the science of psychology to the problems of the physician. Professor Neuhaus.

Text-book: Dana, $6.00.

SURGERY

Professors Harvey and Packard, and Assistant Professors Buchtel and Williams:—

1. Minor Surgery and Principles of Surgery. Throughout the year. 112 h.

Lectures and recitations.

The course covers anæsthesia, the surgery of the bones and joints, and the surgical operations generally included under the the title "Minor Surgery."

Professor Harvey and Assistant Professors Buchtel and Williams.

2. Orthopedics. First semester. 16 h.

Lectures and recitations on the important orthopedic conditions. Professor Packard.

Text-books: Da Costa, $5.50; Parke, Nancrede's Principles of Surgery.

Reference books: Jacobson's The Operations of Surgery, Bryant's Operative Surgery.

OBSTETRICS

Professors Burns, McNaught, and Taylor, Assistant Professor Reed, and Doctor Ingraham:—

1. Quiz Course. First semester. 32 h.

The physiology, diagnosis, and after management of normal pregnancy, labor, and the puerperium.

Assistant Professor Reed.

2. Abnormal Obstetrics. Second semester. 32 h.

The course takes up the subject of abnormal pregnancy, labor, and the puerperium, being completed by the course given in the senior year.

Professors Burns, McNaught, and Taylor.

3. Manikin Course. Eight weeks. 60 h.

Small sections of the class are given practical drill on the manikin, and in methods of making physical examinations of gynecological and obstetrical cases from the dispensary service. Doctor Ingraham.

Text-book: Edgar, $6.00.

GYNECOLOGY

PROFESSOR ELDER:—

1. LECTURE COURSE. Throughout the year. 32 h.

OPHTHALMOLOGY

PROFESSORS JACKSON AND BLACK:—

1. LECTURE COURSE. Throughout the year. 32 h.

The lectures cover the principles of physiological optics and refraction, the ocular movements, and the diseases of the eye which are of most importance in general practice.

Text-books: Jackson, $2.50; Hansell and Sweet.

OTO-LARYNGOLOGY

PROFESSORS BANE, FOSTER, JACKSON, AND LEVY:—

1. LECTURE COURSE. Throughout the year. 32 h.

The lectures cover the ground of the diseases of the ear, nose and throat.

Professors Bane, Foster, and Levy.

Text-books: Ballenger on the Ear, Nose, and Throat, Barnhill and Wells on the Ear, Bacon on the Ear, Coakley on the Nose and Throat.

2. DEMONSTRATION COURSE. Eight weeks. 40 h.

Small sections of the class are given lectures and quizzes on anatomy and physiology of the eye, ear, nose and throat, and practical drill in the use of the ophthalmoscope, otoscope, laryngoscope, rhinoscope, etc.

Professor Jackson and Assistants.

DERMATOLOGY

PROFESSOR MARKLEY:—

1. LECTURE COURSE. Throughout the year. 32 h.

PATHOLOGY

PROFESSOR WHITMAN:—

1. LECTURES AND RECITATIONS. Throughout the year. 64 h.

The course consists of lectures and recitations on special

pathology and is based on assigned portions of a standard text. In addition, students are referred to important articles in the current literature, which they are required to study and to report thereon to the class. Special effort is made to familiarize the students with important researches as they appear.

2. Surgical Pathology. Second semester. 16 h.
Lectures and laboratory exercises on inflammation, the processes of repair, absorption of suture material, etc.

3. Tumor Diagnosis. Throughout the year. 64 h.
Fresh material derived from autopsies and operations is assigned to members of the class, who work up the material and present it with a report to the class. In addition to tumors, other material, especially the granulomata, is studied.

4. Immunity. Second semester. 16 h. Elective.
Lectures, recitations, and laboratory exercises covering the theory of immunity and its application to diagnosis.

MEDICAL JURISPRUDENCE

Professor James H. Pershing:—

1. Lectures. Throughout the year. 32 h.

FOURTH YEAR (AT DENVER)

MEDICINE

Professors Arneill, Gilbert, Hall, Peebles, Rothwell, Sewall, and Whitney, and Doctors Amesse, Arndt, and Emery:—

1. Theory and Practice. Throughout the year. 32 h.
Lectures covering certain conditions of the heart and the common medical maladies and their treatment.
Professors Hall and Rothwell.

2. Case Teaching. Throughout the year. 32 h.
In this course special attention is paid not only to the diagnosis but to the therapeutic principles and remedies suited to the case under discussion.
Professor Gilbert and Doctor Emery.

3. Dietetics. Throughout the year. 32 h.
Lectures.
This course covers physiological and pathological metabolism, and its application to specific pathological conditions.
Professor Peebles.

4. Preventive Medicine. Throughout the year. 64 h.
Lectures.
The course covers public and industrial hygiene and occupational and infectious diseases from the viewpoint of the public health. Professor Peebles.

5. Clinics and Ward Walks. One semester. 144 h.
Patients are assigned to the students who present a detailed study of the case for discussion at a clinical conference.
Professors Arneill, Sewall, Hall, and Doctors Arndt, Simon, Wallbrach, and Sharpley.

6. Dispensary Work. Eight weeks. 72 h.
This course consists in section work conducted by the students under instruction of the staff.
Doctor Amesse and Assistants.

Text-books: Osler, Edwards, Anders, $5.50; Holt, $6.00; Friedenwald and Rührah.
Reference books: Albutt's System, Osler's Modern Medicine, Nothnagel's Encyclopedia of Practical Medicine (American Edition), Forcheimer's The Prophylaxis and Treatment of Internal Diseases, Current Medical Literature.

NEUROLOGY AND PSYCHIATRY

Professors Neuhaus and H. T. Pershing, and Doctors Delehanty, Lazell, and Moleen:—

1. Neurology and Psychiatry. Throughout the year. 64 h.
The lectures cover the subject of psychiatry, following Kraepelin's text-book; psycho-neuroses, and the principles of psychotherapy; and the organic diseases of the peripheral nerves, spinal cord, and brain.
Professor Pershing and Doctor Delehanty.

2. Clinics and Ward Walks. One semester. 64 h.
Patients are assigned to each student who presents a detailed study of the case for discussion at a clinical conference.
Professor Neuhaus and Doctors Delehanty, Lazell, and Moleen.

3. Dispensary Work. Four weeks. 36 h.
This course consists in section work conducted by the students under instruction of the staff.
Professor Neuhaus and Assistants.

SURGERY

Professors Craig, Corwin, Freeman, Lyman, Powers, and Rogers, Assistant Professors Dean and Williams, and Doctor Perkins:—

1. Lectures. Throughout the year. 128 h.
This course includes tumors and injury to the abdomen, surgery of the breast and amputations, surgery of the intestines, liver, spleen, and pancreas, genito-urinary surgery, surgery of the head, neck, and rectum.
Professors Craig, Corwin, Freeman, Lyman, and Rogers.

2. Clinics and Ward Walks. One semester. 176 h.
Professors Craig, Freeman, and Lyman, and Doctors Dean, Perkins, and Williams.

3. Dispensary Work. Eight weeks. 72 h.
The course consists in section work conducted by the students under the instruction of the staff.
Professors Craig, Freeman, Lyman, Packard, Powers, and Assistants.

GYNECOLOGY

Professors Elder and Jayne, and Doctors Cohen, Jaeger, Powell, and Preston:—

1. Clinics. One semester. 48 h.
Professors Elder and Jayne, and Doctors Cohen, Jaeger, Powell, and Preston.

2. Dispensary Work. Four weeks. 36 h.
The course consists in section work by the students under the instruction of the staff.
Professor Jayne and Assistants.

OBSTETRICS

Professors Burns, McNaught, Taylor, and Assistants:—

1. Lectures. Throughout the year. 32 h.
The lectures cover such part of the subjects of abnormal pregnancy, labor, and the puerperium not completed in the course begun in the third year.
Professors Burns, McNaught, and Taylor.

2. Clinical Course. Irregular.
In addition to clinics and demonstrations at the hospitals, each student is required personally to attend ten cases.
Doctors Ingraham, Ferris, and Assistants.

Text-books: Edgar, $6.00; Hirst, $5.00.

3. Ward Walks. Eight weeks. 32 h.

OPHTHALMOLOGY

Professors Chase, Jackson, Coover, and Assistants:—

1. Dispensary Work. Two weeks. 18 h.
The course consists in section work conducted by the students under the instruction of the staff.

OTO-LARYNGOLOGY

Professors Bane, Levy, and Assistants:—

1. Dispensary Work. Two weeks. 18 h.
This course consists in section work conducted by the students under the instruction of the staff. Each student is required to examine cases independently, taking the history and noting the physical findings; these are passed upon by the instructor. The diagnosis is discussed and the student is permitted to carry out the simpler forms of treatment.

2. Hospital Clinics and Ward Walks. Throughout the year. 24 h.
In addition to the dispensary work clinics are frequently held

at the City and County Hospital, in which the commoner throat, nose and ear operations are performed and demonstrated to the class. For these exercises the class is divided into sections of convenient size in order to bring each student sufficiently close to the operation to enable him to witness each step.

DERMATOLOGY AND GENITO-URINARY DISEASES

PROFESSORS DAVIS, WIEST, AND MARKLEY, AND DOCTOR LYONS:—

1. LECTURES. Throughout the year. 32 h.

These lectures cover the ground of the important diseases of the skin and of genito-urinary surgery.

Professors Davis and Wiest.

2. DISPENSARY WORK. Four weeks. 36 h.

The course consists in section work conducted by the students under the instruction of the staff.

Doctor Lyons.

SUMMARY OF HOURS FOR 1913-1914

	Lect.	Lab.	Clin.	Tot.
FIRST YEAR:				
Anatomy	96	288	..	384
Bacteriology	32	120	..	152
Chemistry	64	80	..	144
Histology and Embryology	70	170	..	240
Materia Medica	32	..	..	32
Physiology	80	..	..	80
	374	658	..	1,032
SECOND YEAR:				
Anatomy	48	48	..	96
Chemistry	40	80	..	120
Clinical Diagnosis	32	48	..	80
Hygiene	64	..	..	64
Pathology	64	120	..	184
Pharmacology	64	120	..	184
Physiology	80	120	..	200
Surgery	32	96	..	128
	424	632	..	1,056
THIRD YEAR:				
Dermatology	32	..	..	32
Eye, Ear, Nose and Throat	64	..	40	104
Gynecology	32	..	..	32
Medical Jurisprudence	32	..	..	32
Medicine	192	..	..	192
*Obstetrics	64	..	60	124
Neurology, Electro-therapeutics, and X-Ray	32	..	60	92
†Pathology	64	64	..	128
Pediatrics	32	..	..	32
Physical Diagnosis	..	..	60	60
Surgery	144	..	..	144
Therapeutics	32	..	..	32
	720	64	220	1,004

FOURTH YEAR:				
Dermatology and Genito-urinary Diseases	32	..	36	68
Dietetics	32	..	..	32
Eye, Ear, Nose and Throat	..	..	60	60
Gynecology	..	..	84	84
Medicine	96	..	216	312
Neurology, Electro-therapeutics, and X-Ray	64	..	108	172
*Obstetrics	32	..	32	64
Surgery	128	..	248	376
	384	..	784	1,168
RECAPITULATION:				
First year	374	658	..	1,032
Second year	424	632	..	1,056
Third year	720	64	220	1,004
Fourth year	384	..	784	1,168
	1,902	1,354	1,004	4,260

*Does not include time at clinical cases.

†Does not include time at autopsies.

The above table is based on a teaching year of thirty-two weeks, four weeks having been subtracted from the academic year of thirty-six weeks, namely, one week for registration, two weeks for examinations, and one week for graduation exercises.

UNIVERSITY OF COLORADO HOSPITAL

GENERAL STATEMENT

The Hospital was erected during the summer of 1898, and was dedicated November 19th of that year. The building is located on a high bluff adjacent to the campus and overlooking the city of Boulder and great plains, and affords a beautiful view of the foothills and Arapahoe Peaks in the distance. It contains accommodations for forty patients, in wards and private rooms, and has in addition an operating room, a large and very fully equipped clinical laboratory, a sun parlor, sterilizing rooms, etc. It is constructed according to the most approved plans and its equipment is complete and thoroughly modern. Being upon high ground, excellent drainage is assured. The building is heated with hot water throughout, on the plan known as the direct-indirect system. The ventilation is excellent. Every room is so located that it receives the direct rays of the sun.

There are two general wards, one for women, the other for men. Aside from the general wards, there are ten private rooms.

Patients in the general wards and in the private rooms may employ any reputable physician whom they may elect. Any physician may place his patient in one of the private rooms or wards and continue in charge of the case.

The Hospital is used in caring for students in the University and has been found of great advantage to them when in need of hospital care while away from their homes.

Many forms of disease are of such a nature that the patient cannot well be treated and cared for at home, or the patient may be without home care. Any such case may be sent to the Hospital, and may be cared for by his own physician if he so elects, or he will be cared for by some member of the staff, selected by the physician referring the case to the Hospital.

The Nurses' Home is an eight-room, one-story frame cottage, situated west of the Hospital and near the latter.

HOSPITAL FEES

General wards, $12 a week; private rooms, $14 to $25 a week; operating room, $5 to $10; special nurse, $15 to $25 a week; medicine and dressings at cost.

HOSPITAL BOARD

WILLIAM P. HARLOW, B.A., M.D., Chairman.
WALTER W. REED, M.D.
GEORGE H. CATTERMOLE, M.D.
FRANK R. SPENCER, B.A., M.D., Secretary.

HOSPITAL STAFF

WALTER W. REED, M.D., Superintendent.
MABEL F. HUNTLEY, Superintendent of Nurses.
ALMA E. BARNABY, Matron.

UNIVERSITY OF COLORADO TRAINING SCHOOL FOR NURSES

GENERAL STATEMENT

The University of Colorado Training School for Nurses, which has been in successful operation for the past fifteen years, offers a thorough course of training to young women who desire to enter the profession of nursing. The course of instruction comprises: Practical work in the wards, operating room, laboratories, and diet kitchen; theoretical work in class; lectures and demonstrations; dietetics; massage, and training school administration.

For admission, a certificate of moral character must be presented from two reliable persons of the place in which the applicant last resided, and a certificate of health from a physician. Evidence of four years' work in a high school, or equivalent, is required. The applicant must not be less than nineteen or more than thirty years of age. Applicants may be admitted at any time when a vacancy exists.

The applicant is received on probation for three months. During this period she receives room, board, and a reasonable amount of laundry service. Upon the completion of the probationary period, if her work has been satisfactory to the Superintendent of the Training School, she is retained as a pupil. Pupils receive $8.00 per month. This sum is allowed for the uniform, text-books, and other incidentals, but is not intended as wages. It is considered that the education given is fully equivalent for services. An annual vacation of two weeks is allowed each pupil.

The Training School lectures begin in September and continue until June. There is the usual intermission in lectures at Christmas.

Every applicant for graduation must have completed the required practical courses, and have passed satisfactory examinations in all the required studies, and have been a regular member of the Training School for three years. For additional information, address the Superintendent of the Training School, University Hospital, Boulder, Colorado.

LECTURERS

Mabel F. Huntley, Superintendent of Training School, Ethics of Nursing, Practical Nursing.

Jacob Campbell, M.D., Surgery, Surgical Nursing.

George H. Cattermole, M.D., Diseases of Children, Infant Feeding, Children's Nursing.

Oscar M. Gilbert, M. D., Internal Medicine, General Nursing.

Alvin R. Peebles, M.D., Dietetics, Hygiene.

E. Barber Queal, M.D., Physiology.

Carbon Gillaspie, M.D., Anatomy, Histology.

Walter W. Reed, M.D., Gynecology, Obstetric Nursing.

Homer C. Washburn, Ph.C., B.S. in Phar., Materia Medica.

Clough T. Burnett, M.D., Bacteriology.

Alma E. Barnaby, Massage, Dietetics, Cooking, Hospital Economics.

SCHOOL OF PHARMACY

FACULTY

Homer C. Washburn, Ph.C., B.S., in Phar.,
Professor of Pharmacy.

The Faculty of the School of Pharmacy consists of Professors and Instructors in the College of Liberal Arts and School of Medicine whose work contributes to the various courses.

GENERAL STATEMENT

ORGANIZATION

The Board of Regents in April, 1911, authorized the establishment of a School of Pharmacy, to be a division of the School of Medicine.

FUNCTION

The School offers thorough and practical courses in all the various subjects pertaining to pharmacy, and fits the student to pursue any of the various branches of the profession.

It is the aim of the School to cooperate with the State Board of Pharmacy and the State Pharmaceutical Association in maintaining a high standard in the profession of pharmacy.

EQUIPMENT

Ample facilities are provided for carrying on the work in the School of Pharmacy. The work in Bacteriology, Botany, and Chemistry is done in the departments of the College of Liberal Arts and of the School of Medicine, a description of which may be found under the proper headings in the College of Liberal Arts and the School of Medicine.

The Department of Pharmacy proper is housed in a two-story brick building. It is well equipped. The lecture and recitation room, laboratory, and office rooms are well lighted and ventilated, and are provided with water, gas, and drainage.

FEES

For fees, see page 52.

COURSES OF STUDY

The School of Pharmacy offers three courses of study, as follows:

1. A two-year course leading to the degree Pharmaceutical Chemist (Ph.C.).

2. A three-year course leading to the degree Bachelor of Pharmacy (B. Phar.). (The third year of this course is given in Denver.)

3. A four-year course leading to the degree Bachelor of Science in Pharmacy. (B.S. in Phar.).

The work of the first two years in all three courses is the same, and a student may complete the Ph.C. and B. Phar. courses in three years, or the Ph.C. and B.S. in Phar. courses in four years.

SCHEDULE

In outlining the courses of study it is the aim of the faculty to adhere, as nearly as may be, to the recommendations of the National Committee representing the Boards and Schools of Pharmacy of the United States, as contained in the Pharmaceutical Syllabus.

REQUIREMENTS FOR ADMISSION

Completion of four years of high-school work or equivalent is required for entrance. At least one year of Latin is prescribed.

See page 43.

THE PH. C. COURSE
AND FIRST TWO YEARS OF B. PHAR.
AND B. S. IN PHAR. COURSES

FIRST YEAR

FIRST SEMESTER			SECOND SEMESTER		
Inorganic Chemistry	(Chem. 1 and 2)	5	Inorganic Chem.	(Chem. 1)	3
Qual. Analysis	(Chem. 3)	2	Qual. Analysis	(Chem. 4)	2
Pharmacy	(Phar. 1)	5	Pharmacy	(Phar. 2)	5
Pharmacognosy	(Mat. Med.1)	3	Pharmacognosy	(Mat.Med.2)	2
			Botany	(Mat. Med. 3)	3
		15			15

SECOND YEAR

FIRST SEMESTER			SECOND SEMESTER		
Quan. Analysis	(Chem. 5a and 5b)	5	Quan. Analysis	(Chem. 6a and 6b)	5
Organic Chem.	(Chem. 12)	4	Pharmacy	(Phar. 4)	5
Pharmacy	(Phar. 3)	5	Materia Medica	(Mat. Med.5)	2
Materia Medica	(Mat. Med.4)	2	Phar. Latin		3
		16			15

THE B. PHAR. COURSE

The schedule for the first and second years of the B. Phar. course has already been outlined under the Ph.C. course. The third year is given in Denver and the schedule will be announced later.

THE B. S. IN PHAR. COURSE

The first two years of this course are the same as outlined under the Ph.C. course.

The work of the third and fourth years is drawn very largely from the science departments of the College of Liberal Arts and from the School of Medicine. The student, with the advice of the committee on registration, will be allowed considerable latitude in the choice of his work, but it must be chosen with an idea to specialization and efficiency in some particular line of pharmaceutical industry.

DESCRIPTION OF COURSES

PHARMACY

1. THEORETICAL PHARMACY. First semester. 5 h.
   Lectures and recitations.
   A study of the principles used in pharmacy, together with a sufficient number of demonstrations to illustrate their application, including pharmaceutical arithmetic.

2. OFFICIAL PHARMACY AND PHARMACEUTICAL TECHNIQUE. Second semester. 5 h.
   Recitations and laboratory work.
   A study of the drugs and preparations of the United States Pharmacopœia as far as the liniments. Special reference is given to standard requirements, solubilities, tests for purity, assay methods, and dose. The student makes several preparations of each pharmaceutical type, as well as a number of non-official preparations, making in all about forty preparations for the course.

3. Continuation of Course 2. First semester. 5 h.
Recitations and laboratory work.
The latter half of the United States Pharmacopœia is studied as in Course 2, and about sixty preparations are made by the student.

4. Pharmaceutical Testing and Assaying. Second semester. 5 h.
An application of the official and standard tests for identification, purity, detection of adulteration, and assay of official drugs, including qualitative tests for the alkaloids and practice in their separation and identification.

5. Pharmaceutical Latin. Second semester. 3 h.

MATERIA MEDICA

1. Pharmacognosy. First semester. 3 h.
Lectures and recitations.
A study of the vegetable and animal drugs with special reference to identification, habitat, methods of collection and preparation for the market, medicinal constituents, official preparations and dose.

2. Continuation of Course 1. Second semester. 2 h.
Lectures and recitations.
With Course 1 it covers all the official vegetable and animal drugs, as well as the more important non-official drugs.

3. Botany 6 (or Equivalent).
For a description of this course, see under Biology in the College of Liberal Arts.

4. Materia Medica. First semester. 2 h.
Lectures and recitations.
This course deals with the pharmaco- and therapy-dynamics of the more important drugs, both official and non-official.

5. Continuation of Course 4. Second semester. 2 h.
Lectures and recitations.
With Course 4 this covers all the more important drugs in present use.

CHEMISTRY

For description of the courses in Chemistry, see under Chemistry in the College of Liberal Arts.

SCHOOL OF LAW

FACULTY AND LECTURERS

FACULTY

JAMES H. BAKER, M.A., LL.D., President.

JOHN D. FLEMING, B.A., LL.B., LL.D., Dean, Professor of Law; Associate Judge of Practice Court.

MOSES HALLETT, LL.D., Dean and Professor of American Constitutional Law, *Emeritus.*

JOHN CAMPBELL, M.A., LL.B., LL.D., Dean *Emeritus;* Professor of Law of Private and Municipal Corporations.

ALBERT A. REED, LL.B., Professer of Law.

WILLIAM H. BRYANT, B.S., LL.B., Professor of Law.

EDWIN VAN CISE, Professor of Law.

WILLIAM H. PEASE, B.A., LL.B., Professor of Law.

*JAMES F. WILLARD, Ph.D., Professor of American and English Constitutional and Political History.

CARL C. ECKHARDT, Ph.D., Acting Professor of American and English Constitutional and Political History.

FRED G. FOLSOM, B.A., LL.B., Instructor in Law; Judge of Practice Court.

LECTURERS

†HUGH BUTLER, Lecturer on Common Law Pleading.

ROBERT S. MORRISON, Lecturer on Laws of Mines and Mining.

CHARLES S. THOMAS, LL.B., Lecturer on Law of Evidence.

LUCIUS M. CUTHBERT, M.A., LL.B., Lecturer on Roman Law.

JOHN A. RINER, LL.B., Lecturer on International Law.

CHARLES D. HAYT, Lecturer on Law of Taxation.

WILLARD J. WHITE, M.A., M.D., Lecturer on Medical Jurisprudence.

ERNEST L. WILLIAMS, LL.B., Lecturer on Appellate Procedure.

JAMES W. MCCREERY, Lecturer on Law of Irrigation and Water Rights.

---

*On leave of absence, 1912-1913.

†Died, June 27, 1912.

JOHN E ROBINSON, Lecturer on Bankruptcy.
HARRY S. SILVERSTEIN, B.A., Lecturer on Criminal Procedure.
HENRY E. LUTZ, LL.B., Lecturer on Equity Pleading and Practice.

EUGENE A. BOND, Librarian.
DUDLEY I. HUTCHINSON, Assistant Librarian.
GEORGE H. SHAW, Assistant Librarian.
LYMAN T. ELWELL, Stenographer and Clerk of the Practice Court.

GENERAL STATEMENT

INTRODUCTORY

The Law School was opened in September, 1892. The course of study covers three years of thirty-six weeks each. The school is a member of the Association of American Law Schools.

BUILDING

The School of Law is now occupying its new building. This building contains commodious class rooms, professors' rooms, a moot court room, and a large room for the library. It is the gift of Senator Simon Guggenheim.

ACADEMIC YEAR

The Academic Year, 1913-1914, will begin on Monday, September 8, 1913.

ADMISSION

In addition to a regular four-year high-school course or its equivalent, two years of college work, estimated at sixty semester hours, is required for admission. This preliminary entrance requirement includes at least two high-school units of Latin. All applicants for admission must present certificates of good moral character.

ADVANCED STANDING

Admission to advanced standing will be allowed to candidates, if otherwise entitled to admission to the School as regular students, who satisfy the faculty that they have made sufficient progress in the study of law.

SPECIAL STUDENTS

Candidates twenty-one years of age, who cannot satisfy the admission requirements, but are qualified to pursue special work, may be admitted to certain courses with the approval of the Law Faculty.

DEGREE OF BACHELOR OF LAWS

The degree of Bachelor of Laws will be conferred on students who have passed all the examinations of the entire course. The candidate for a degree must have pursued at least one year's course as a resident student. No degree will be conferred until the candidate shall have reached the age of twenty-one years.

DEVELOPMENT OF THE AMERICAN LAW SCHOOL

Legal education in this country has come to be a matter of law-school instruction. For many years the number of students in law offices has decreased; practicing lawyers have gradually given less and less attention to the instruction of students in their offices. Meanwhile the number of law schools and the number of students in law schools have rapidly increased.

In 1878 there were fifty schools with 3,012 students. According to the report of the United States Commissioner of Education for 1910, there were at the date of the report 128 law schools; the number of students therein was 19,567.

Law schools have not only increased in number and in students, but they have made very general and marked advancement in requirements for admission, and for graduation; in the prescribed course of study; and in methods of instruction. The one-year law school has become constantly rarer and at the time of the above report there were only two remaining in the United States. Now most schools of good standing require at least college matriculation, or its equivalent, as a condition of admission; prescribe a course of study covering three years and occupying all the student's time; and grant the LL.B. degree only after a rigid and searching examination; while many now require in addition to a standard high-school course, one or two years of college work for admission.

METHOD OF INSTRUCTION

As to methods of instruction, no subject connected with legal education has been the occasion of so much controversy. Three distinct plans are found in use in different institutions:

(a) That which may be called the text-book method, and consists of class-room recitations and quizzes upon assigned portions of a legal treatise.

(b) What is known as the "Case-System," as understood and taught at Harvard, originated there more than a quarter of a century ago, and although not in general use, has been gradually adopted to a greater or less extent in a number of the best law schools. It consists of the inductive study of carefully arranged and selected cases. It does not exclude the use of texts and commentaries on the law, by the student in his individual research, but requires no use of them for class-room work.

(c) The teaching of law by lectures has the authority of age, and has been pursued in the profession for hundreds of years, certainly as far back as the reign of Elizabeth, when there were "readers," very important officials, who gave instruction, both in the inns of court, and in the inns of chancery. This plan was pursued in this country also by Judge Wilson of Pennsylvania in 1790 and 1791, afterwards by Chancellor Kent of New York, by the Litchfield Law School, and in the early days of Harvard. At a later period it fell somewhat into disuse and seemed about to be abandoned. Recently it has been regaining lost ground.

Each of these methods has its advantages and limitations, and each its earnest advocates.

Though text-book recitations have been entirely abandoned in some of the best law schools, it may well be doubted whether, by any other means, the beginner in legal studies can so quickly acquire an accurate and systematic knowledge of legal principles as by the study of the best, and only the best, text-books and commentaries. Were that the sole object of the student, there could be no better method. The purpose, however, of legal study, is to make a lawyer, and the mere knowledge of legal principles falls far short of converting the law student into a lawyer. In addition, there must be a marked development in the man himself; he must learn to think independently, to weigh authorities, to deduce principles from adjudications, to carefully discriminate in their application, to appreciate the *ratio decidendi*. In no other way can he make the intellectual stride so surely as by careful study and analysis of well-selected precedents, followed by earnest class-room discussion and debate, presided over by the instructor, upon the application of the principles involved. In such work the student's mental attitude is active and largely that of an independent investigator. Each step requires thought, actual mental effort, and so results in mental development. His work is done with a sense of responsibil-

ity, and so is thorough. He becomes inured to an atmosphere of mental antagonism and criticism, and soon learns to defend his position with good temper and some skill, and perhaps, to detect the flaw in his opponent's argument. Step by step he is growing into a lawyer. Such, fairly considered, are the merits of the "Case System." Perhaps its advantages can be best derived by a student who has been previously prepared for such work by the study of good text-books.

The law lecture, which has so well withstood the test of time, is not to be ignored or depreciated. When delivered by a really eminent specialist, a man of magnetic and intellectual force, it brings both legal principles and reasoning home to the mind of the attentive student, with a vividness and force that stimulates his thought and vitalizes his reading. The personality of the lecturer, and the previous training of the student are all important factors of success.

These considerations have induced the Faculty of the Colorado School of Law to adopt a scheme of instruction which involves the employment of all three systems. Much of the first year's work consists of class-room recitations from standard text-books; some time is given to lectures; and the student makes his first trial of case study, the work being limited in amount and graduated to the progress of the class. In the second year, the bulk of the work is done with cases, though text-books and lectures are not altogether disused. In the third year, cases are still used, but the proportions are reversed. There are a few courses of case work, text-books being disused in the class-room, and many courses of lectures. These are delivered by some of the most eminent members of the profession in Colorado, to students who have been prepared and seasoned by two years' hard study of text-books and cases.

Thus the scheme of instruction is composite, and designed to secure a maximum of the excellence while accompanied by a minimum of the faults of each of the three methods.

TEACHING PRACTICE

The transfer of legal education from the office to the law school has been marked by a great gain in thoroughness and fullness. But the loss of the training in practice afforded by the business of the office is much to be regretted. It provided the student a sort of law clinic, the want of which must now be supplied by the law

school if his legal education is to be complete. He must not only be taught the principles of procedure in all its branches, jurisdiction, pleading, evidence, trial and appellate relief, but he should see these principles in actual practical application. To some extent he may do this by attendance upon the courts and close observation and study of the proceedings there. But, beside being a silent spectator in public courts, the student should have a court of his own, where he may devise remedies, sue out process, draw pleadings, prepare instructions, make briefs and argue questions of law—and perhaps of fact—frame record entries, save exceptions, and preserve them in the record, and take the case up on error, or by appeal. To supply this need, the Regents of the University have authorized a Practice Court, presided over by a Professor of Practice. A court room, including a Clerk's office, has been provided; and the records and files are kept and the proceedings of the court conducted in conformity with usage and practice in the District Courts in Colorado.

The following, briefly stated, is the course of procedure. The Second-Year Class and Third-Year Class are divided into groups of four students; to each group is assigned a carefully prepared case, the facts of which are so stated as, when properly pleaded, to present an issue of law or of fact; two of the group are counsel for plaintiff and two for defendant. Counsel for plaintiff devise the remedy, sue out process, superintend its proper service and draw the complaint. Defendant's counsel may demur, move to strike out, or to make more definite and certain, or to quash the process, or plead, as they see fit. Every step, however, is subject to the supervision of the Professor of Practice, and he may require errors to be corrected at once, or leave them in his discretion, to the attention of the opposing counsel. Every record entry occasioned by any step taken by counsel must be drafted by them and submitted to the clerk. He requires the correction of any error or insufficiency, and the entry is then made upon the record by a deputy clerk, selected from the students. When the case is at issue, it is set for trial, or hearing before the Professor of Practice sitting as Judge of the Practice Court. Members of the first-year class, when required, constitute the jury. In proper cases appeal is allowed to a court specially organized for the purpose.

It is intended that each student shall participate in the conduct to final judgment, of at least three cases, in each of the second and third years of his course.

INSTRUCTION IN OTHER DEPARTMENTS OF THE UNIVERSITY

The instruction given in other departments of the University is open also to students of the Law School, subject to the approval of the law faculty. Among the numerous courses, those upon Political Economy, Geology, Mineralogy, History, Oratory and Debate, are particularly recommended for law students.

THE LIBRARY

The University Library, open to students of all departments, contains 61,030 bound volumes.

The Law Library contains several sets of English and American reports, the Reporter System, the digests, including the Century Digest, and a well-selected collection of text-books, and is increased each year under special appropriations by the Regents for that purpose. Several of the leading law journals, American and English, are regularly taken and are on file.

The students of the Law School, although they will not be allowed to take books from the law library of the Supreme Court of the State, at Denver, will be allowed free access during hours when the library is open.

The members of the Boulder bar have generously granted the use of their libraries to the students of the School.

THE C. I. THOMSON COLLECTION.

An accession of one thousand volumes, chiefly reports, from the library of the late Judge C. I. Thomson, the gift of his widow, has been lately made to the law library. The volumes are known and catalogued as the "C. I. Thomson Collection."

COURSE OF STUDY

It is the purpose of the School to afford such training in the fundamental principles of the English and American law as will thoroughly prepare the student to practice his profession with credit in any state or country where this law prevails.

The course of study occupies the student three years of nine months each, and is so arranged as to require a minimum of fifteen hours of actual recitations and lectures each week from each class.

SCHEDULE

FIRST YEAR.

1. Civil Procedure at Common Law. Professor Fleming.
   Martin on Civil Procedure; Keen's cases.

2. Criminal Law and Procedure. Professor Reed.
   May's Criminal Law; Chapin's Cases.
   Lectures at appointed hours by Mr. Harry S. Silverstein.

3. Constitutional History of England. Professor Willard.

4. Contracts. Professor Pease.
   Hammon on Contracts, and selected cases.

5. Elementary Law. Professor Pease.
   Blackstone's Commentaries; Clark's Elementary Law.

6. Personal Property. Professor Reed.
   Shouler on Personal Property.

7. Political and Constitutional History of the United States.
   Professor Willard.

8. Real Property. Professor Pease.
   Tiffany on Real Property; Blackstone.

9. Torts. Professor Reed.
   Cooley on Torts; Burdick's Cases on Torts.

SECOND YEAR.

1. Agency. Professor Fleming.
   Huffcutt's Cases on Agency, 2nd Edition.

2. Bailments and Carriers. Mr. Fred G. Folsom.
   Hale on Bailments and Carriers.
   Selected and Colorado Cases.

3. Bills and Notes. Professor Reed.
   Bigelow on Bills and Notes; Bigelow's Cases on the Law of Bills, Notes and Checks; Colorado Negotiable Instruments Law.

4. Civil Procedure Under the Code. Professor Van Cise and Mr. Cæsar A. Roberts.
   Colorado Code of Civil Procedure and Selected Cases. Lectures also at appointed hours.

5. Damages. Professor Reed.
   Sedgwick's Elements of Damages.

6. Domestic Relations. Professor Reed.
   Woodruff's Cases on Domestic Relations.

7. Evidence. Professor Pease.
   Hughes on Evidence; Thayer's Cases on Evidence.
   Lectures also delivered on this subject by Mr. Charles S. Thomas.

8. Equity Jurisdiction. Professor Pease.
   Bispham's Principles of Equity and Selected Cases.

9. Equity Pleading and Practice. Mr. Henry E. Lutz.
   Lectures at appointed hours.

10. Pleading and Practice Under the Code. Mr. Fred G. Folsom.
    This course covers the work in the Practice Court described below.

11. Real Property. Professor Pease.
    Gray's Cases on Property.
    Tiffany on Real Property.

12. Quasi-Contracts. Professor Reed.
    Selected Cases.

THIRD YEAR.

1. Appellate Practice. Mr. Ernest L. Williams.
   Lectures at appointed hours; illustrative cases.

2. Bankruptcy. Mr. John E. Robinson.
   Lectures and Selected Cases.

3. Brief Making and Use of Law Books. Mr. Fred G. Folsom.
   Covers work in Practice Court mentioned above.

4. Constitutional Law. Professor Fleming.
   Constitutional Law in U. S., McClain; McClain's Cases, 2d Edition.
   Also lectures at appointed hours by Judge Hallett.

5. Conflict of Laws. Professor Fleming.
   Minor's Conflict of Laws; selected cases.

6. Conveyancing and Abstracts of Title. Professor Pease.
   Lectures at appointed hours, supplemented by actual work in title searching in County Recorder's Office.

7. Corporations. Professor Reed.
   Warren's Cases on Private Corporations.
   Lectures on Private and Municipal Corporations at appointed hours by Hon. John Campbell.

8. Extraordinary Remedies. Professor Van Cise.
   Colorado Code Civil Procedure. Selected cases.

9. Insurance. Professor Fleming.
   Lectures at appointed hours. Illustrative cases.

10. Irrigation, Water Rights and Riparian Privileges. Professor Fleming.
    Mills' Irrigation Manual.
    Mr. James W. McCreery lectures at appointed hours.

11. Legal Ethics. Hon. John A. Riner.
    Lectures at appointed hours.

12. Medical Jurisprudence. Dr. Willard J. White.
    Lectures at appointed hours.

13. Mental Alienation.
    Lectures at appointed hours.

14. Mines and Mining. Professor Bryant and Professor Fleming.
    Costigan's Cases; Morrison's Mining Rights. Mr. Robert S. Morrison lectures at appointed hours.

15. Municipal Corporations. Professor Reed.
    Smith's Cases on Municipal Corporations.

16. Partnership. Professor Reed.
    Mechem on Partnership.

17. Pleading and Practice Under the Code. Mr. Fred G. Folsom.
This course covers the work in the Practice Court described above.

18. Real Property. Professor Pease.
Gray's Cases on Property; Tiffany on Real Property.

19. Roman Law. Mr. Lucius M. Cuthbert.
Lectures at appointed hours.

20. Sales. Professor Fleming.
Williston's Cases on Sales of Personal Property. 2d Edition.

21. Taxation. Mr. Charles D. Hayt.
Lectures at appointed hours.

22. Trusts. Professor Van Cise.
Selected Cases.

23. Wills, Executors and Administrators. Professor Fleming.
Costigan's Cases on Wills; Colorado Wills and Administration Act, 1903, and selected cases.

UNIVERSITY EXTENSION DIVISION

FACULTY

Loran D. Osborn, Ph.D.,
Director of the University Extension Division.

The Faculty consists of Professors and Instructors in the College of Liberal Arts who conduct Extension Courses, together with special Extension Instructors appointed to conduct classes in various centers throughout the state.

SPECIAL EXTENSION STAFF

James F. Keating, M.A., *Pueblo*, Extension Instructor in Education.

Frank D. Slutz, M.A., *Pueblo*, Extension Instructor in English Literature.

John Girdler, B.A., *Glenwood Springs*, Extension Instructor in English Literature.

Oliver S. Remington, B.A., *Cripple Creek*, Extension Instructor in Mathematics.

George C. Brandenburg, B.A., *Brighton*, Extension Instructor in Education.

W. C. P. Meddins, *Telluride*, Extension Leader in Sociology.

Robert A. Ross, *Grand Junction*, Extension Leader in Sociology.

D. E. Wiedmann, B.Ph., *Montrose*, Extension Leader in Sociology.

Philip M. Condit, M.S., *Delta*, Extension Leader in Sociology.

Mrs. Saul Epsteen, *Boulder*, Lecturer in Telling Stories to Children.

GENERAL STATEMENT

Through its Extension Division the University extends its benefits beyond the borders of the campus and makes them available, as far as possible, to the state at large. It thus renders a valuable service to citizens and communities who could not otherwise receive its advantages.

The Extension Division was formally inaugurated in June, 1912. It has not yet been organized into definite departments, but its work is being undertaken along the following distinctive lines:

Correspondence-Study.
Lectures and Addresses.
Social Welfare.
Information, and Library Extension.
Bulletins of Investigations.

CORRESPONDENCE STUDY

INDIVIDUAL WORK

CONSTITUENCY.

Correspondence-study appeals especially to those whose formal schooling has been interrupted, such as high-school graduates who are delayed in going to college, and students who are obliged to drop out for a time after taking part of a college course; and to all who wish to carry on systematic and cultural study, whether they have had the advantages of previous college training or not, including public-school teachers, members of women's clubs, and others.

TEACHING BY MAIL.

The practicability of teaching by mail has been amply demonstrated. While this method loses much in comparison with resident study, yet there are compensations in the individual character of the work. Every student studies and recites the entire lesson. He cul-

tivates the habit of discriminating thought in connection with the material under consideration, and he learns to assimilate what he reads. It is a common testimony that the average grade made by correspondence students is as high or higher than that of those who take the work in residence.

UNIT OF WORK.

When practicable each correspondence course is divided into forty weekly lessons, representing an amount of work equal to a five-hour course in residence for one semester, and is so reckoned in giving University credit. A three-hour course involves twenty-four lessons, and a two-hour course sixteen lessons. It is estimated that a five-hour course of forty lessons will require an average of one hour a day, six days in the week, for forty weeks.

INSTRUCTORS AND COURSES.

The corespondence-study work is carried on under the immediate direction of the University faculty. Courses are given in the following subjects: Latin, German, English, Mathematics, Physics, Zoology, Philosophy, Psychology, Education, History, Sociology, and Music. Courses in other subjects can probably be arranged on request.

METHOD.

The student who desires to undertake correspondence-study should select the course or courses he may wish to take, and then write to the Director of the Extension Division for an application blank. After the enrollment has been duly completed, assignments of lessons prepared by the instructors are sent to the student, together with instructions concerning securing text-books, doing the work, answering the questions, returning the papers, and such other details as may be deemed helpful. An examination is given at the end of the course.

EXPENSES.

The fees for correspondence-study are necessarily greater than for resident class work, because of the increased time required of the instructor. But the fees are made as low as the expenses of standard work will warrant. The fee for each correspondence course of forty lessons is $20.00. For a shorter course the fees are proportionately less; that is, a three-hour course (twenty-four lessons) is $12.00, and a two-hour course (sixteen lessons) $8.00. Where more

than one full course of forty lessons is taken at one time, a reduction of 25 per cent. will be made on each additional course. These fees are payable in advance, and are not refunded in case the student drops the work. The text-books are purchased by the students themselves; but this expense is not great.

STUDY CLASSES

Correspondence-study may be arranged in classes, if so desired, by a group of individual correspondence students who are taking the same course. In this case one of the number acts as leader and the correspondence is carried on with the entire group through him, the class meeting weekly for the discussion of the assignments, and sending in written papers periodically.

Or a special class may be organized for systematic study, in charge of a member of the University faculty or of a competent local instructor who has been appointed on the Extension Staff of the University. In any case, the work is conducted under the general supervision of the head of the University department interested, and is of the same character as the residence courses.

Classes of this kind provide for a two-hour session each week during the school year; and, upon passing a satisfactory examination, students receive the same credit given for a two-hour course taken in residence at the University, namely two hours for a semester or four hours for the academic year. In short, the work is made to approximate as closely as possible to that taken in residence, both in the qualifications of the instructors, the character and conduct of the courses, the time required of the student for preparation, and the amount of credit given.

The fee for each student for work done in classes has been fixed by the Regents at $10.00 for a two-hour course continuing throughout the school year (four credits) or in the same proportion for classes covering a shorter period or meeting less frequently.

LECTURES AND ADDRESSES

The University Extension work is primarily educational. The lectures given by this Division, therefore, are not merely entertainments. Nevertheless, the aim is to make them of an interesting character—the ideal being scholarly knowledge presented in popular form.

In the main, lectures are given by the Extension Director and the other members of the University faculty, and cover a wide range of subjects, including literature, history, economics, sociology, philosophy, science, health, and matters relating to community and social betterment. They may be in the form of single addresses or of courses. The latter plan is preferable, for in this way more connected and profitable work can be done. A series of six or more lectures may easily be arranged, to be given weekly, bi-weekly or monthly.

The advantages of such work are obvious and many. The University teachers are devoting their whole attention to investigation and teaching in the various fields of knowledge. Their messages can not fail to bring new angles of vision, a fuller appreciation of life, and added inspiration for living. The best type of social enjoyment is that which centers about some definite object that is worth while.

Lectures may be arranged for by any organization or club in a town—women's clubs, commercial clubs, lodges, churches, young people's societies, or groups or classes organized for that special purpose. The Extension Director, upon request and as circumstances permit, will visit a town and assist in arranging a course of lectures.

Study-classes may be formed in connection with the lectures, and such University credit secured, upon examination, as may be arranged by the University.

The Lecture Department will also, as far as possible, respond to requests for speakers for high-school graduations, teachers' conventions and institutes, and for other special occasions.

The Director of the Extension Division is also Extension Lecturer, and is available for lectures dealing with sociology and social problems, as far as his time will permit.

Mrs. Epsteen, University Extension Lecturer, is prepared to respond to calls for lectures on stories for children, covering such topics as "Telling Stories to Children"; "Stories from the Odyssey"; "Norse Tales"; "Round Table Tales"; "Literature for Children"; "Folk Tale and Myth."

The names of other members of the faculty available for lectures, together with their topics, will be furnished upon application to the University Extension Director.

The fee for single lectures is $15.00 and expenses; for a course of six lectures, $75.00 and expenses.

In arranging for lectures, such limitations will naturally have to be observed as are imposed by geographical considerations and the residence work of the faculty; but the University will go to the extent of its resources in cooperating in the matter.

SOCIAL WELFARE

During recent years there has been a growing realization of the fact that a university's obligation to the state is not met by providing academic courses, however good these may be. There are many civic and social problems demanding solution today, and to this task also the educational forces of the state must lend their assistance. Such service naturally falls to the Extension Division of the University.

SOCIAL CENTERS

What is known as social-center work has become very prominent in certain parts of the country. It aims to gather the interests of a community about some available local center, and make provision for a larger and better community life by means of lectures, continuation schools, debates, discussions, entertainments, amusements and various other forms of social activity.

The work is not of a charitable nature, nor confined to any one class of citizens. It is an attempt to enlist the entire community in the discussion of questions of political, educational, religious and civic welfare, and to encourage community activities. It is perhaps the nearest possible modern approach to the old New Eng-

land town meeting in the development of a community consciousness and a local unit of civic life.

The Extension Division will be glad to cooperate as far as possible in the inauguration or assistance of such centers in the state, by furnishing information and by such personal help as may be desired and as may be possible.

SOCIOLOGICAL CONFERENCES

The University is ready to render assistance in arranging sociological conferences on important social questions, cooperating with organizations of social workers anywhere in the state. These conferences may be held in Boulder or in any city or community where they can meet to advantage. The first conference of this sort for social workers, under the auspices of the University, will be held at Boulder, June 30 to July 6, 1913.

CLUB PROGRAMMES

The Extension Division of the University is also prepared, upon request, to assist women's clubs, teachers' clubs, and other organizations engaged in study or social service with programmes, suggestions, and material that may be of help in their work.

PUBLIC HEALTH

Through the agency of the School of Medicine, a wide service can be rendered to the state in matters pertaining to public health.

For the instruction of the public, the School is prepared to furnish popular lectures dealing with such matter as public health, personal hygiene, pure food, and eugenics.

For the assistance of physicians throughout the State, there is at present in course of preparation a collection of specimens, lantern slides and photographs, illustrating various medical topics, which will be loaned to medical societies and to physicians who are preparing papers upon special subjects. In connection with the study of the animal parasites of the State, the School offers, without charge, to assist any physician in the diagnosis of animal parasitic infections. Other means of assisting physicians are planned.

A Department of Preventive and Experimental Medicine has recently been established, the results of whose work will be available to the public and will be of great value in the direction of the prevention of disease.

INFORMATION, AND LIBRARY EXTENSION

The University is exceptionally qualified to furnish information on various subjects. Questions frequently arise that cannot be answered from books in small libraries; but the desired information can usually be secured from the resources of the large University library. Where the answers are not contained in books at all, they can often be supplied from the knowledge or experience of the University professors. So far as time and resources permit, the University will provide information on subjects of importance to those who desire it. This Department aims to assist in every way the diffusion of knowledge.

A special feature of the department's work will be the supplying of material to high schools for debates and discussions. As far as the needs of the residence work will allow, books from the University Library are also loaned to high-school students, upon the recommendation of the superintendent or principal, cost of transportation being assumed by the borrower. Assistance will be given, upon request, in organizing or enlarging libraries.

Through the Library and the Department of Economics and Sociology, the Extension Division of the University will also furnish, to the extent of its resources, information concerning municipal and legislative affairs, for the assistance of state and city legislators and of workers along these lines.

In connection with this department biological and geological specimens will be identified when sent for examination.

BULLETINS OF INVESTIGATIONS

The various departments of the University are continually making special investigations of important subjects. More than forty such investigations have been completed during the past two years, and many others are under way or are contemplated as soon as funds will permit. They include subjects of practical importance, such as the study of taxation, the study of various industrial, educational and social problems, economy in education, timber testing, tests of building stones, tests of reinforced concrete, tests of road materials, sanitary surveys, electric railway tests, analysis of coals, the hygienic laboratory. The results of the more important of these studies will be published from time to time by the Extension Division in special bulletins, which will be furnished upon request.

SUMMER SESSION

FACULTY

Milo G. Derham, Ph.D.,
Director of the Summer Session.

The Faculty of the Summer Session consists of members of the Faculties of the College of Liberal Arts, the School of Medicine, the School of Law, and Professors and Lecturers from other institutions.

GENERAL STATEMENT

PURPOSE AND ORGANIZATION

The Summer Session was established in 1904. The School of Mountain Field Biology at Tolland, Colorado, was opened in 1909. Courses in the Denver Division of the School of Medicine were first offered in 1912, and in the School of Law in 1913.

The Summer Session serves the needs of three classes of students: (1) teachers and others who are not able to attend during the academic year; (2) regularly matriculated students who desire to supplement the work of the regular session; (3) students whose entrance preparation is deficient; (4) those who wish to review, or extend their acquaintance with certain subjects without credit.

ADMISSION AND CREDITS

The courses are open without entrance examinations to all who can profit by them. Non-matriculated students on completion of courses receive certificates showing the amount and grade of the work accomplished. A certain number of college entrance courses are offered to those whose preparation for the University is incomplete. Regularly matriculated students are allowed, for each five-hour course successfully completed, credit for two semester hours of the regular academic year. Graduates of this University and of other institutions of similar standing may meet the residence requirement for the M.A. degree during four (or in exceptional cases, three) summer sessions. Graduates who contemplate work toward an advanced degree should write to the Director of the Summer Session not later than June 1. Correspondence is invited with reference to any courses which may be desired.

RELATION OF THE SUMMER WORK TO THE COLLEGE OF EDUCATION

The Summer Session constituency is largely made up of teachers, superintendents, and principals. In recognition of this fact almost all of the courses, except those in Law and Medicine, are conducted with a view to emphasizing educational methods and principles. Many of them count toward the twenty hours of professional training prescribed by the Colorado Certification Law.

PUBLIC LECTURES

Open lectures are given every afternoon and several evenings a week, affording students the opportunity of hearing speakers of eminent attainments in educational, literary, and scientific lines. The list of lecturers in 1913 includes Professor John Adams, University of London; Hon. P. P. Claxton, Commissioner of Education of the United States; Director Leonard P. Ayres, Russell Sage Foundation; Dean Fred B. R. Hellems, Dean J. Raymond Brackett, Professor Theodore D. A. Cockerell, Professor Melanchthon F. Libby, Professor Junius Henderson, and other members of the resident faculty.

Under the joint auspices of the Colorado Society of the Archæological Institute of America and the University of Colorado, a series of thirty lectures on General Archæology and Art: Greek, Roman, Biblical, will be given throughout the session by Professor Henry R. Fairclough, Leland Stanford Jr. University; Professor Mitchell Carroll, George Washington University; and Professor Lewis B. Paton, Hartford Theological Seminary.

WEEK OF APPLIED SOCIOLOGY

The first annual conference of social workers will be held at the University, June 30 to July 6, 1913. There will be daily lectures and conferences dealing with various phases of present-day social and religious problems. Prominent social workers, clergymen, specialists in sociology and representatives of women's clubs and similar organizations have given assurance of their attendance and support. These lectures and discussions are open without charge to all who may be interested.

ADVANTAGES OF CLIMATE AND SURROUNDINGS

The climate and surroundings of Boulder afford exceptionally favorable conditions for summer study and recreation. The days are never uncomfortably warm; the nights are always cool. The air is dry and invigorating. On every side the scenery is varied, grand and beautiful.

EXERCISE AND RECREATION; EXCURSIONS

The University gymnasium, the tennis courts and athletic field are open for the use of the students of the Summer Session. The

region about Boulder offers abundant opportunities for mountain climbing. There are also conducted excursions each week, for students and faculty, to points of interest.

FEES

The fee for one course is ten dollars; for two or three courses, fifteen dollars; for each course after the third, five dollars. Special fees are required for courses in the School of Mountain Field Biology at Tolland, for the Medical Courses in the Denver Division of the Medical School, for Law, Bacteriology, and Physical Training. In Chemistry, the laboratory fee is three dollars for each course taken.

ACCOMMODATIONS

The price for good board near the Campus varies from $4.00 to $6.00 a week. Rooms may be obtained for $2.00 a week. The rates down town are lower. By the formation of boarding clubs or by doing light housekeeping, expenses are materially reduced. The Registrar has a list of desirable boarding and rooming places and will supply information upon application.

REDUCED RAILWAY RATES

Low excursion rates for the summer are given by all the railways from eastern and southern points to Colorado.

Those who wish to take advantage of them are advised to apply to their local agents for official information.

SESSION OF 1913

The Tenth Summer Session of the University opens June 23 and closes August 2. It is desirable that students register June 20 or 21. Final examinations are held August 1 for all students who wish credit or certificates for their work.

Courses in Liberal Arts and in Law are offered at Boulder; courses in Mountain Field Biology, at Tolland; courses in Medicine, in the Denver Division of the School of Medicine.

ADDITIONAL INFORMATION

The announcement of the Summer Session will be sent upon request.

REGULAR COURSES

EDUCATION

1. Values, Methods, and Results in Education.
2. Practicum: Chief Problems of Secondary Education
3. General Ethnology.
4. The Administration of Schools.
5. Principles of Teaching.
6. Practice Teaching.

PHILOSOPHY

1. The Philosophy of Browning.
2. Social Ethics.

PSYCHOLOGY

1. General Psychology.
2. Educational Psychology.

ENGLISH

1. American Literature.
2. English Classics for Entrance.
3. Wordsworth and Tennyson.
4. Greek Poetry in English Translations.
5. Shakespeare.
6. Shakespeare's Predecessors.
7. English Composition.

ORATORY AND DRAMATIC EXPRESSION

1. Elocution and Theory of Expression—Reading.
2. Voice Training and Dramatic Action.
3. Reading in the Public Schools.
4. Public Speaking.
5. Dramatic Art (Including the Presentation of a Play During the Session).

ECONOMICS AND SOCIOLOGY

1. Outlines of Economics.
2. Principles of Sociology.
3. Practical Sociology.

HISTORY AND CIVICS

1. American Government.
2. Recent American History.
3. History of Modern Europe. 1300-1789.
4. Teachers' Course.
5. Contemporary Europe.

LATIN AND GREEK

1. Virgil, Æneid, Books VII-XII.
2. Teachers' Course.
3. Cicero's Correspondence.
4. Greek Poetry in English Translations.

GERMAN

1. Elementary German (Double Course).
2. Elementary German (Continuation).
3. Teachers' Course.
4. The German Drama of the Nineteenth Century.

ROMANCE LANGUAGES

1. Beginning French.
2. Intermediate French.
3. Advanced French.
4. Beginning Spanish.

MATHEMATICS

1. Solid Geometry.
2. Trigonometry.
3. College Algebra.
4. Analytics and Calculus.
5. The Teaching of High-School Mathematics.
6. Advanced Course.

PHYSICS

1. Experimental Physics.
2. General Physics.
3. General College Physics—Teachers' Course.
4. Theoretical Physics.

CHEMISTRY

1. General Inorganic Chemistry—Lectures.
2. General Inorganic Chemistry—Laboratory.
3. Qualitative Analysis.
4. Quantitative Analysis.
5. Ore Analysis.
6. Analysis of Iron and Steel.
7. Gas Analysis.
8. Organic Chemistry—Lectures.
9. Organic Chemistry—Laboratory.

GEOGRAPHY AND GEOLOGY

1. General Geology.
2. Physical Geography.
3. Geographic Influences.

BIOLOGY (AT THE UNIVERSITY)

1. Botany.
2. Sanitary Science and Public Health.

LIBRARY SCIENCE AND PRACTICE

1. Library Science and Practice.

ATHLETICS

1. A Course in Competitive Athletics; Theory and Practice (For Men).
2. A Course in Physical Culture (For Women).

GENERAL BACTERIOLOGY

1. Lectures and Recitations.
2. Practical Bacteriology.

LAW

1. Mining Law.
2. Irrigation Law and Water Rights.

SCHOOL OF MOUNTAIN FIELD BIOLOGY

1-2. Botany.
3-4. Zoology.
5. Research Problems.

MEDICAL COURSES (AT DENVER)

1. Gross and Microscopical Pathology.
2. Laboratory Diagnosis.
3. Serology.
4. Physical Diagnosis.
5. Post-Graduate Course in Ophthalmology.

CATALOGUE OF STUDENTS

GRADUATE SCHOOL

NAME. RESIDENCE.

Argue, Lora, B. A.....Boulder
University of Colorado, 1912.
Latin, Greek, History.

Aurand, Harry Albert, B. A.....Denver
University of Colorado, 1912.
Geology.

Bell, James Washington, B.A.....Boulder
University of Colorado, 1912.
Economics, Philosophy, History.

Belser, Louise Hulda, B.A.....Boulder
University of Colorado, 1911.
Mathematics, Philosophy.

Bliss, Frederick Van Ostrand, B.S. (E.E.).....Denver
University of Colorado, 1907.
Mathematics, Physics.

Boswell, Fannie Judith, B.A., M.A.....Boulder
University of Colorado, 1910.
Literature, English.

Brackett, William Raymond, B.A.....Boulder
University of Colorado, 1905.
Electricity, Mechanical Engineering, Physics.

Brewster, Susan, B.A.....Boulder
Smith College, 1912.
Psychology, Romance Languages, Philosophy.

Burgoyne, M. Antoinette, B.S., B.A., M.A.....Bridgeport, Michigan
Valparaiso University, 1907; University of Michigan, 1908, 1909.
Sociology, Literature, History.

NAME. RESIDENCE.

Coffman, Olive Elizabeth.....Omaha, Nebraska
Literature, English.

Cook, Ashley Lyman, B.S.....Hartford, Connecticut
Trinity College, 1911.
Geology.

Cooper, Elva, B.A., M.A.....Boulder
University of Wisconsin, 1904, 1906.
Mathematics.

Craig, Maud Elizabeth, B.A.....Boulder
University of Colorado, 1912.
Greek, Latin, Philosophy.

Crawford, Ivan Charles, B.S. (C.E.).....Leadville
University of Colorado, 1912.
Civil Engineering.

Curtis, Harry Alfred, B.S. (Ch.E.), M.A.....Boulder
University of Colorado, 1908, 1910.
Chemistry, Physics.

Curtis, Irene Cleota Hall, B.A.....Boulder
University of Colorado, 1908.
Literature.

Dean, Paul Marshall, B.A., M.A.....Boulder
University of Colorado, 1908, 1911.
Chemistry, Physics, Mathematics.

Duff, Carl Mathias, B.S. (C.E.), M.S.....Boulder
University of Colorado, 1910, 1912.
Mathematics, Civil Engineering.

Dunklee, Edward Vaughan, B.A.....Denver
University of Colorado, 1911.
Psychology.

Dyer, Eloie Churchell, B.A.....Boulder
University of Colorado, 1911.
History, Comparative Literature.

NAME. RESIDENCE.

Ellis, Marion Durbin, B.A., M. A.....Boulder
Indiana University, 1909, 1910.
Biology, Palaeontology.

Elwell, Sara Dorathea, B. A.....Pueblo
University of Colorado, 1907.
Mathematics.

Fawcett, Charles De Van, B.S. (E.E.).....Pittsfield, Massachusetts
University of Colorado, 1911.
Electrical Engineering.

Field, Georgia Louise, B.A., M.A.....Hillsboro, Massachusetts
Smith College, 1903; University of Colorado, 1909.
Literature, English.

Finley, Robert Byron, B.S. (E.E.).....Schenectady, New York
University of Colorado, 1911.
Electrical Engineering.

Fischer, Helen May Waltemeyer, B.A.....Boulder
University of Colorado, 1910.
Philosophy, Literature.

Flueckiger, Mary, B.A.....Boulder
University of Colorado, 1907.
German.

Ganson, Rose Elizabeth.....Boulder
Psychology.

Goodale, Frank Mason, B.A.....Grand Junction
University of Denver, 1912.
Geology, Chemistry.

Habermann, Caroline Louise, B.A.....Rico
University of Colorado, 1911.
German, English.

Hunter, Helen Josephine, Pd.B., B.A. in Ed.....Denver
State Teachers' College, 1911, 1912.
Literature, Philosophy.

NAME. RESIDENCE.

Huntington, Whitney Clark, B.S. (C.E.), C. E.....Denver
University of Colorado, 1910, 1912.
Civil Engineering, Physics.

Jackson, Bethell Howard, M.E., M.A.....Boulder
Stevens Institute, 1895; University of Colorado, 1906.
Chemistry.

Johnson, Ida Margaret, B.A.....Colorado Springs
Colorado College, 1909.
Romance Languages, German, Greek.

Johnston, Alexander Laughlin, B.S. (E.E.).....State College, Pa.
University of Colorado, 1911.
Electrical Engineering.

Kendall, Claribel, B.A.....Boulder
University of Colorado, 1912.
Mathematics.

Kettle, Sarah Isabella, B.A.....Fort Collins
University of Colorado, 1903.
German.

Knoettge, Carl Harmon, B.A., B.S. (C.E.).....Chicago, Illinois
University of Colorado, 1907, 1910.
Civil Engineering.

Leonard, Lynn Ruliff, B.S. (E.E.).....Boulder
University of Colorado, 1912.
Electrical Engineering.

Levin, Mary, B.A.....New York, New York
University of Colorado, 1909.
English Literature, Philosophy.

Logan, Hal Helm, B.A., B.S. (C.E.).....Denver
University of Colorado, 1908.
Irrigation Engineering.

Lowrey, Anna, B.A.....Boulder
University of Colorado, 1911.
Zoology, Botany.

NAME. RESIDENCE.

Millard, Floyd Hays, B.S. (C.E.), M.S.....Champaign, Illinois
University of Colorado, 1910; University of Illinois, 1912.
Civil Engineering.

Moore, Allen, B.S.....Gower, Missouri
Oklahoma A. & M. College, 1911.
Economics, History.

Morgan, Newlin Dolbey, B.S. (C.E.).....Chicago, Illinois
University of Colorado, 1910.
Civil Engineering, Applied Mathematics.

Morris, Anna Belle, B.A.....Boulder
University of Colorado, 1912.
Literature, English.

Morris, Clara Evelyn, Pd.B., Pd.M., B.A.....Greeley
State Teachers' College, 1910, 1911.
German, Romance Languages.

Mosley, Martha Josephine Hubbard, B.A.....Denver
University of Colorado, 1910.
Romance Languages, English.

Moyer, Vera Mabel, B.S.....Forrest, Illinois
Illinois Wesleyan, 1910.
Education.

Nelson, Kate, B.A.....Boulder
University of Colorado, 1912.
History, Literature.

Park, Margaret Marion, B.A.....Longmont
Smith College, 1910.
Education, German.

Poe, Charles Franklin, B.A., M.A.....Greeley
University of Colorado, 1911.
Chemistry, Pharmacy.

Powless, Anna Holliday.....Alma
Literature.

NAME. RESIDENCE.

Reynolds, Edna Marguerite, B.A.....Denver
University of Colorado, 1912.
Psychology, German, Philosophy.

Rohwer, George Newton, B.A.....Boulder
University of Colorado, 1912.
Chemistry, Mathematics.

Salomon, Carl Emanuel, B.A., M.A.....Berthoud
University of Colorado, 1910, 1911.
Literature, Latin.

Shelledy, Ruth Marguerite, B.A., M.A.....Boulder
University of Colorado, 1910, 1912.
German.

Sieber, Bertha Wilhelmina, B.A.....Woodland, California
Leland Stanford, Jr. University, 1912.
Latin, German, Education.

Skinner, James Dudley, B.Ph.....Denver
Yale University, 1894.
Mechanical Engineering.

Smith, Guy Watson, B.S. (E.E.), M.S.....Castle Rock
University of Colorado, 1908, 1909.
Mathematics.

Sorenson, Royal Wasson, B.S. (E.E.).....Pasadena, California
University of Colorado, 1905.
Electrical Engineering.

Sovereign, Harry Evans, B.S. (C.E.).....Grand Valley
University of Colorado, 1908.
Irrigation Engineering.

Sperry, Charles Stillman, Jr., B.S. (C.E.), B.A...Savannah, Georgia
University of Colorado, 1911.
Civil Engineering.

Stine, Elizabeth Macklin, B.Sc.....Hastings, Nebraska
Hastings College, 1889.
German.

NAME. RESIDENCE.

Swain, Elva, B.A.....Boulder
University of Colorado, 1912.
Mathematics.

Trowbridge, Mary, B.A.....Boulder
University of Colorado, 1911.
Mathematics.

Underhill, Olive Lorena, B.Ph., M.A.....Pueblo
University of Chicago, 1909; University of Colorado, 1912.
Philosophy.

Vestal, Arthur Gibson, B.A.....Elmhurst, Illinois
University of Illinois, 1911.
Botany, Zoology, Philosophy.

Walker, Henry Samuel, Jr., B.S. (C.E.).....Orizaba, Mexico
University of Colorado, 1908.
Civil Engineering.

Wightman, James Wesley, B.S. (E.E.).....Schenectady, New York
University of Colorado, 1911.
Electrical Engineering.

—70.

COLLEGE OF LIBERAL ARTS

SENIOR CLASS

NAME.	RESIDENCE.
Ames, Fannie Orlina	Glenwood, Iowa
Ashley, Glaister Herod	Boulder
Ashley, Thomas Cooley	Saguache
Atkinson, Thomas Ernest	Greeley
Ayres, Margaret Elise	Sterling
Ball, Una Laura	Idaho Springs
Barker, Howard Hill	Boulder
Barker, Kathleen Mary	Boulder
Beck, Maud Almyra	Boulder
Bennett, Clifford Hollis	Lenora, Kansas
Bennett, Rexie Ellen	Boulder
Brown, Ethel Mae	Boulder
Bunce, Hazel Udine	Fruita
Burk, Urmal Wilma	Boulder
Burke, Maude Estella	Boulder
Burke, Ruth Genevieve	Boulder
Butters, Gladys Almeda	Denver
Carlson, Minnie Olivia	Longmont
Carney, Helen Margaret	Boulder
Carr, Olive Virginia	Meeker
Chase, Mabel Leonard	Boulder
Chittenden, Dorothy	Boulder
Clark, Grace Edith	Central City
Coffman, Olive Elizabeth	Omaha, Nebraska
Conklin, Grace Elma	Delta
Conrad, Agnes	Kansas City, Missouri
Cosgrove, Maud Alice	Silver City, New Mexico
Cowell, Hazel	Grand Junction
Dargavel, Gertrude Louise	Salida
Dean, Marguerite	Boulder
Dean, Willa Agatha	Grand Junction
Deatherage, Charlaine	Paonia
DeWeese, Cama Elizabeth	Boulder
Doughty, Charles Linton, Jr	Lamar
Drinkwater, Harold Paul	Denver

NAME.	RESIDENCE.
Farrington, Florence Mildred	Boulder
Fernald, Hester	Boulder
Ferris, Adelaide Austin	Carthage, Illinois
Flynn, Ned	Aspen
Fonda, Catharine Farrell	Boulder
Franklin, Electa	Victor
Fraser, Margaret Marie	Boulder
Galligan, Florence Esther	Boulder
Ganson, Rose Elizabeth	Idaho Springs
Gill, Catharine	Littleton
Greenen, Rose Carmen	Boulder
Gregory, Tessie Edith	Pueblo
Groom, Robert John	Boulder
Hadsell, Zeda Myrtle	Cedaredge
Hart, Helen Louise	Boulder
Holch, Arthur Everett	Gilman, Illinois
Hubbard, Mae E.	Boulder
Huffaker, Vivien Faye	Denver
Johnson, Anna Elvira	Berthoud
Johnson, Charles Beattie	Shreveport, Louisiana
Johnson, Rudolph R. B	Niwot
Kendall, Florence	Boulder
Kennedy, Etta Ruth	Ridgway
Kennicott, Lillian May	Boulder
Kiker, Grace	Boulder
Kitchen, Benjamin Ford	Boulder
Kyle, Estelle Marie	Denver
Leach, Winthrop Worcester	Denver
Lee, Helen May	Pueblo
Lee, Joe Etta	Shreveport, Louisiana
Leslie, Katherine Bower	Pueblo
LeVeque, Norma Ebolie	Boulder
Lowe, Irwin Merrill	Glenwood Springs
Marvin, Cornelius James	Denver
Meikle, Margaret Ellen	Boulder
Miller, Eva Grace	Boulder
Odlum, Arnold Asbury	Boulder
Olson, Esther Mathilda	Pueblo
Parlapiano, Sam	Pueblo

NAME.	RESIDENCE.
Place, Edwin Bray	Boulder
Posse, Harriet Adaline	Del Norte
Powless, Anna Holliday	Alma
Pulliam, Obie Sue	Loveland
Randall, Helena Gloyd	Boulder
Rathvon, Nathaniel Peter	Boulder
Richardson, Dio	Boulder
Savage, Joseph Carr	Denver
Schmoll, Hazel Marguerite	Ward
Shaw, George Hamlin	Houlton, Maine
Shute, Ruby Ray	Boulder
Smith, Charlotte Merle	Boulder
Smith, Irvetta Mary	Denver
Smith, Margaret Robina	Montclair
Smith, Thelma	Fowler
Streamer, Lula May	Boulder
Sutley, Melvin Lockett	Center
Swanson, Victoria Anna	Georgetown
Tarbell, Robert Raymond	Saguache
Varney, Frederick William	Denver
Walker, Eleanor May	Denver
Wheeler, Kathleen Fisher	Greeley
Williams, Frances Edna	Elbert
Wright, Zella Muriel	Boulder
Young, Margaret	Colorado Springs

—99.

JUNIOR CLASS

NAME.	RESIDENCE.
Anderson, Mary Katherine	Denver
Andrew, Marion	Henderson
Aughinbaugh, Ruth	Boulder
Bailey, Warner Dunn	Denver
Ball, Mary Ethel	Louisville
Basham, Rees Arthur	Boulder
Bedortha, Luther Eddy	Boulder
Belding, Ralph	Eagle
Biethan, Frederick H	Blackfoot, Idaho

NAME.	RESIDENCE.
Blakey, Susie	Boulder
Boeke, Lenore	Brush
Boeke, Richardt Miles	Riverton, Wyoming
Bouslog, John Samuel	Boulder
Brown, Frank Lacy	Boulder
Brown, Helen Esther	Boulder
Burton, Dorothy Margaret	Pueblo
Burton, Helen Bernice	Bismarck, North Dakota
Butler, Mary	Denver
Campbell, William Ralph	Boulder
Chew, Mary Brand	Pueblo
Clatworthy, Leah Alice	Fort Morgan
Cleveland, Mattie Hope	Boulder
Cohenour, Leo Bertram	Denver
Conlin, Rose Catherine	Aspen
Cowles, James Howard	Denver
Currier, George Bruce	Grand Junction
Currier, Lucius Carpenter	Heiberger
Curtis, Gladys Constance	Castle Rock
Davis, George Clarence	Hamilton, Indiana
DeMarais, Howard Arthur	Aspen
DesBrisay, Anna Mary	Boulder
Divelbiss, Grace	Pueblo
Dixon, Marjorie Adele	Denver
Echternach, Albert Verne	Palisade
Eddy, Elise Osgood	Boulder
Epperson, Mary Winifred	Aspen
Erickson, Maud Elvira	Boulder
Fair, Evan Albert	Chrisman, Illinois
Fairchild, Addie May	Benton City, Missouri
Faus, Ernestine Kathryn	Boulder
Fischer, Valentine Benjamin	Boulder
Fleming, William Donaldson	Boulder
Flynn, Vera Jeannette	Pueblo
Frost, Mary Cooper	Denver
Fruit, Edna Elaine	Aspen
Fye, Verna Belle	Boulder
Garvey, Thecla	Denver
Gilcrest, Dorothy Havens	Denver

NAME.	RESIDENCE.
Gjellum, Arthur Blaine	Fowler
Greene, Alice Marian	Arvada
Groesbeck, Hazel Addie	Boulder
Hammond, Mary Hannah	Cripple Creek
Hardin, Virginia	Denver
Harris, Georgia B	Boulder
Harwell, Ervin Lunsford	Putnam, Texas
Havenor, Della	Boulder
Hemberger, Charles	Golden
Hildebrand, Lucille Gertrude	Denver
Hinds, Norman Ethan Allen	Denver
Hines, John Frances	Oral, South Dakota
Hukill, Olin Van Meter	Waterloo, Iowa
Hulburt, Fannie Eliza	Palisade
Humphrey, May	Canadian, Texas
Johnson, Frances	Denver
Johnson, Lillie	Longmont
Johnson, Mary Ethel	Boulder
Kabell, Minnie Merle	Vernal, Utah
Keep, Florence Beatrice	Boulder
Kinnison, Inez	Fort Collins
Kleff, Irene	Denver
Knowles, Edward Gillette	Denver
Laforgue, Paul Alain Louis	Boulder
Lewis, Glenn Francis	Denver
Libby, John Hermiston	Boulder
Lightbourn, Willis Barker	Central City
Lindstrom, Mary Elizabeth	Sterling
McGrath, Florence Kathleen	Boulder
McLean, Mabel Inez	Idaho Springs
McNeil, Gracie May	Boulder
Macomber, Harold George	Denver
Maltby, Glenn Thurston	Rocky Ford
Mann, Paul Cyrus	Boulder
Martin, Helen Gertrude	Leadville
Masterson, Rebecca Byrd	Galveston, Texas
Merrill, Vida Helen	Boulder
Milburn, Verdie Mae	Boulder
Miller, Earle Brenneman	Boulder

NAME.	RESIDENCE.
Mints, Lloyd Wynn	Boulder
Monahan, Julia Aileen	Greeley
Morris, Earl Halstead	Farmington, New Mexico
Mosley, William Garrison	Boulder
Musser, Ruth Marie	Denver
Nash, Edgar	Boulder
Nelson, Marguerite	Boulder
Oliver, Alice Prudence	Boulder
Owens, Clyde Meehan	Keota
Patton, Rosamond Edith	Goldhill
Price, Bertha Marilla	Cripple Creek
Reed, Walter Kellogg	Boulder
Repetschnig, Emma Jennie	Victor
Ridgeway, Arthur	Boulder
Robinson, Elizabeth	Boulder
Rohwer, Elsie	Boulder
Rollman, Minnie	Leadville
Rowland, Jay Miller	Boulder
Saal, Rudolf Ernest vom	Denver
Schaedla, Vesta Eleanor	Boulder
Scott, Helen Darling	Manitou
Selleck, Elizabeth Fay	Boulder
Shulters, Maude Alice	Boulder
Slater, Opal	Boulder
Small, Grace Elizabeth	Denver
Smith, Robert Gunson	Montclair
Snell, Lolita	Boulder
Sorenson, Helen Caroline	Pueblo
Stearns, Robert Lawrence	Denver
Stillwagon, Nelle	Boulder
Streamer, Charles Walker	Boulder
Swartwood, Harold Poe	Waseca, Minnesota
Sydow, William	Boulder
Templeton, Nelle Ethel	Boulder
Thomas, Grace Earla	Kent, Iowa
Titus, Esbon Yokum	Denver
Tour, Isabelle Sophia	Pueblo
Trezise, Ethel Irene	Boulder
Truxal, Mary Elizabeth	Hoisington, Kansas

NAME.	RESIDENCE.
Turner, Annie Laurie	Boulder
Waldo, Hubert Devotion	Purcell
Weaver, Carl Franklin	Canton, Illinois
Weyerbacher, Leah	Boulder
Whitman, Earle Hill	Pueblo
Zahnen, Helena Katherine	Monte Vista

—132.

SOPHOMORE CLASS

NAME.	RESIDENCE.
Ahrens, Hazel Viola	Denver
Allen, Frank Ernest	Paonia
Alley, Urania Girdner	Princeton, Missouri
Ames, Ruth Schlenz	Denver
Arasmith, Edith Merle	Golden
Atchison, Richard Bush	Mexico, Missouri
Barrett, David Dean	Boulder
Batchelder, Kathryn Mary	Sterling
Baum, Eva Margaret	Natoma, Kansas
Bengtson, Carl August	Longmont
Billings, Carl Mansfield	Boulder
Blake, Noble Ernest	Boulder
Bloom, Joseph Conlon	Denver
Bracy, Sarah Marguerite	Boulder
Brewster, Edith Navarre	Boulder
Brown, Hattie May	Denver
Brown, Nina Audrey	Eaton
Bruner, Richard James, Jr	Pueblo
Bryce, Anna Effel	Holly
Burns, Robert Martin	Olathe
Campbell, Claude Melnotte	Boulder
Campbell, Lloyd Hubbard	Boulder
Campbell, Marjorie Grace	Boulder
Canter, Mabel Ann	Montclair
Carney, Florence Janet	Boulder
Carpenter, Mary Jeannette	Denver
Casey, Eleanore Susan	Boulder
Chamberlain, Roy	Hotchkiss

NAME.	RESIDENCE.
Claff, Dina	Denver
Clampitt, Hazel Annette	Clarendon, Texas
Cleveland, Jeane	Boulder
Colt, Sarah Viola	Boulder
Conkling, Enid	Lyons, Kansas
Cornelius, Temple Houston	Durango
Cornish, Alice Elizabeth Louise	Montrose
Counts, Hilda	Boulder
Cowell, Edward Wier	Denver
Cowgill, George Raymond	Mankato, Minnesota
Crook, Valentine	Glenwood Springs
Culver, Edith Helen	Fort Collins
Curry, Ethel Susan	Longmont
Davis, Arnim Archibald	Loveland
Dawson, Mary Moore	Boulder
Dickinson, Laurel	Los Angeles, California
Divelbiss, Flora Mable	Pueblo
Douden, Paul Alfred	Boulder
Duce, James Terry	Boulder
Duff, Neva Lisetta	Boulder
Duggan, Frederick Francis	Victor
Dunklee, George Kinney	Denver
Dunsmoor, Ruth Ethel	Boulder
Eddy, Adeline Hamilton	Boulder
Eddy, Henrie May	Boulder
Ellsberg, Sophia	Denver
Ennis, Louise Anna	Denver
Fenner, Helen Elizabeth	Boulder
Flynn, Marguerite Marie	Carbondale
Freeman, Edward Morris	Denver
Freeman, Eva Allen	Monte Vista
Fritchman, Norris M	Boise, Idaho
Gammon, Harry A	Ramah
Ganson, Clara May	Boulder
Gates, Gertrude Isabel	Boulder
Geltz, Herbert Spencer	Massillon, Ohio
Griffith, Grove Beecher	Leadville
Guise, Lucy Mabel	Gold Hill
Hallock, Claude Wiles	Buena Vista

NAME.	RESIDENCE.
Hampton, Canzada Willard	Grand Junction
Harper, Ina Elizabeth	Denver
Henderson, John Wallace	Greeley
Henshaw, Marl Millett	Evansville, Indiana
Herrick, Myron Collins	Gunnison
Hoover, Minnie Jenivie	Boulder
Hunt, Merritt Gates	Boulder
Hunt, Mattie Neva	Montrose
Ireland, Clarence Leo	Boulder
Ivers, Wayne Franklin	Loveland
Jacobs, Charles A	Denver
Kemp, Donald Campbell	Boulder
Kennedy, Kenneth Adams	Denver
Klingler, James Herman	Boulder
Knight, Evelyn Elizabeth	Denver
Knowles, Charles Nelson, Jr	Denver
Lamb, Frances Eugenie	Victor
Lavington, Leon Edward	Flagler
Lawrence, Henry Donald	Sugar Loaf
Lee, Frank Charles	Salida
Littler, Paul Le Brock	Fort Collins
Loupe, Ruth Hamilton	Boulder
Loupe, Walter Raymond	Boulder
Lovelace, Ruth Bush	Boulder
Loyd, Stuart Elizabeth	Boulder
Lumsden, Will Frank	Grand Junction
Lundberg, William Orlando	Boulder
Luqueer, Fred Augustus	Olathe
MacDonald, Hazel Marian	Idaho Springs
MacPherson, Kenneth William	Palmyra, New York
McDonald, Franklin Joseph	Leadville
McGlothlen, Goldie Letha	Boulder
McKenney, Dwight L	La Salle
McRae, Roy Gabriel	Boulder
Malone, William Henry, Jr	Denver
Martin, Lucye Neal	Como
Maxwell, Georgia Edith	Denver
Meyers, Anna Viola	Fort Morgan
Miller, Florence Elizabeth	Cheyenne, Wyoming

NAME.	RESIDENCE.
Miller, Herbert Alonzo	Fort Morgan
Morgan, Evelyn	Erie
Morgan, Ray Tennyson	Boulder
Morley, Katharine Maud	Denver
Nelson, Stanley Constance	Boulder
Nichols, Percy Harold	Racine, Wisconsin
Northcutt, Forrest Clifton	Trinidad
Noxon, Edith Whitcher	Boulder
Odlum, Marguerite E.	Boulder
Olsen, Almyra Cornelia	Boulder
Olsen, Oliane Antoinette	Boulder
Olwin, Portia Harper	Boulder
O'Mahoney, Thomas Edward	Leadville
Overbey, Herschiel Reanes	Iowa Park, Texas
Patton, John Adam	Boulder
Penny, Shirley Louise	Boulder
Phillips, Katheryne Irene	Boulder
Plimpton, Robert Scarff	Salida
Pratt, Meredith Remick	Denver
Prosser, Georgiana	Cheyenne, Wyoming
Putnam, Stella Bertha	Boulder
Querbes, Randolph Anthony	Shreveport, Louisiana
Rennie, Gertrude	Denver
Reynolds, James Price	Greeley
Rice, Florence Irene	Denver
Robertson, Mary Elizabeth	Boulder
Rothwell, Stephen Gainsford	Denver
Sandhouse, Raymond Mirick	Fort Collins
Saunders, George Jason	Denver
Schamel, Frances Marion	Boulder
Scotland, Ruth Cecelia	Boulder
Sewell, Carrie Almira	Carbondale
Shattuck, Barbara	Boulder
Shattuck, Burtis B. H.	Boulder
Shutt, Charles William	Fort Collins
Sibbald, Garth E. W.	Boulder
Simmons, Zula Gordon	Denver
Slater, Lewis Cecil	Boulder
Sloan, William Wesley	Berthoud

NAME.	RESIDENCE.
Smith, Harriett	Longmont
Spangler, Henry Roy	Denver
Spring, Herbert Arthur	Boulder
Springer, Alice Elizabeth	Fort Collins
Stein, William Peter	Eagle
Stidger, Dagmar	Denver
Stockder, Archibald Herbert	Canon City
Stryker, Mary Magdalene	Boulder
Stumpf, M. Anton	Denver
Subejano Cipriana	Iloilo, Philippine Islands
Taylor, Edward Thomas, Jr	Glenwood Springs
Thomas, Carlisle Rosalie	Denver
Thoreau, Henry David	Denver
Tidball, Irene Louise	Denver
Tourtelotte, Margaret	Denver
Tuchock, Clara Marie	Pueblo
Tuchock, Edna Helen	Pueblo
Vance, Deane Harold	Montrose
Vincent, Wendell	Denver
Vivian, Chauncey Higgins	Golden
Voils, Leone	Grand Junction
Walsh, Lorraine	Denver
Wann, Helen Marie	Denver
Webb, Helen Manker	Boulder
Webster, Bessie Alethea	Alamosa
Weston, Clifford Grete	Boulder
White, Edna Ruth	La Jara
Wickert, Marie Ellen	Boulder
Woodard, Matilda Louise	Saguache
Wright, Myron Gilmore	La Veta
Young, Ruth Maud	Leadville
Yowell, John Jasper	Denver
Ziegler, Walter Harvey	Denver
Zorn, Grace Emily	Boulder

—179.

FRESHMAN CLASS

NAME.	RESIDENCE.
Atencio, Jose Andres	Capulin
Aughenbaugh, Dana Wallace	Waseca, Minnesota
Axelrood, Matt Morris	Denver
Bailey, Mildred Lee	Denver
Baskin, Morris Jacob	Denver
Bates, Emma Elena	Grand Junction
Baum, Esther	Natoma, Kansas
Beatty, Olin George	Monte Vista
Beck, Howard Augustus	Leadville
Bernard, Nellie Marie	Boulder
Berry, Standish	Boulder
Betts, Floyd Edward	Longmont
Bigelow, Ruth	Denver
Bishop, Sidney Willard	Denver
Blackwood, James Arnold	Boulder
Bonham, Ruth Ann	Edgewater
Bowland, Edward Woolfolk	Red Cliff
Boyd, Ann Dickie	Saguache
Brace, Letitia Austin	Denver
Brown, Edna Marian	Durango
Browning, Frederick Milton	Denver
Browning, Violet	Boulder
Brunton, Harold James	Denver
Buckland, Gertrude Elouise	Denver
Burke, Margaret Katherine	Boulder
Burke, Thomas George	Boulder
Burkholder, James Edward	Georgetown
Burnham, Roland Putnam	Boulder
Burns, Loretta	Pueblo
Calkins, Musa	Montrose
Chatfield, Elda Alice	Boulder
Cheney, Anna Marie	Boulder
Cheney, Bess Adel	Boulder
Christensen, Clarence Melvin	Boulder
Clark, Gladys Winifred	Denver
Clarkson, Amelia Jean	Louisville
Cline, Carl Peter	Rocky Ford

NAME.	RESIDENCE.
Cluphf, Viola Myrtle	Boulder
Cohen, Harry Charles	Denver
Connor, Paul Emmons	Fruita
Cook, Edward Sewell	Henderson
Cooper, William Hamilton	Denver
Corlett, Abbie Leila	Monte Vista
Cornville, Fern	Boulder
Crawford, Jessie Margaret	Grand Junction
Crawford, Maud Evangeline	Grand Junction
Curry, Ben Walker	Boulder
Cuthbertson, Stuart	Pueblo
Dean, Mattie Elizabeth	Boulder
Dickinson, Frederick Walter	Denver
Dickson, Ray	Glenwood Springs
Donovan, James Sheridan	Longmont
Donovan, John Theodore	Longmont
Douden, Fonnie Victor	Boulder
Dowie, Lucy Steves	Boulder
Downen, Donald Barclay	Denver
Duff, Anna Almeda	Boulder
Evans, Donald McWhinney	Denver
Fairchild, Mattie Marie	Benton City, Missouri
Falk, Henry Oscar	Boulder
Finnell, Otis Albert	Pueblo
Foster, Harriet Elizabeth	Palisade
Frazier, Quivera Muriel	Elco
Frohn, Roger Evans	Grand Junction
Froman, Cleo Russell	Golden
Furness, Jessie May	Boulder
Gerhart, Ethel May	Colorado City
Gex, Phyllis	Grand Junction
Goff, Ova Crayton	Barnard, Missouri
Goldsmith, Jake R	Trinidad
Goodrich, Charles Irving	Denver
Grant, Jane	Boulder
Gray, Frank Henry	Lusk, Wyoming
Greenwood, Ruth Esther	Hotchkiss
Griffin, Robert Allen	Kansas City, Missouri
Griffith, Charles Barrick	Denver

NAME.	RESIDENCE.
Guthrie, Robert Lee	Boulder
Harris, Riley Joe	Fowler
Hart, Verling Kersey, Jr	Cheyenne, Wyoming
Hastings, Irene	Grant, Nebraska
Healy, Roscoe Howland	Denver
Helmke, Willard Richard	Delta
Hendrickson, Victor James	Denver
Hilderman, Margaret Anna	Sterling
Hill, John Paul	Longmont
Hoagland, Edgar Allan Poe	Alamosa
Hotchkiss, Bessie Winifred	Montrose
Howard, Edwina Artna	Rocky Ford.
Huber, Kirk	Tipton, Iowa
Hudgins, William Thomas	Texarkana, Texas
Hunt, Fred William	Paonia
Hutchinson, Margaret Ann	Boulder
Imes, Isaac Earl	Sawpit
Isbill, Edgar Allan	McGregor, Texas
Johns, Charles Robert	Blaine
Johnson, Anna Carolyn	Idaho Springs
Jolley, Paul Simpson	Abilene, Kansas
Jones, Gordon, Jr	Denver
Jones, Guy Edwin	Montrose
Jordan, Lillian Margaret	Rawlins, Wyoming
Kachel, Franklin Robert	Denver
Keene, Ethel Therese	Denver
Keiper, Harry George	Rocky Ford
Kiker, Cora	Boulder
King, Frances Eliza	Otis
King, William Mabry	Sterling
Kinnison, Florence Irene	Fort Collins
Kinsey, Helen Imogene	Boulder
Kluss, Florence Helen	Boulder
Latshaw, Paul Fleshman	Boulder
Le Cron, Leslie Middlekauff	Denver
Lein, Gladys Marcia	Cheyenne Wells
Lindberg, Darthula	Boulder
Lindsay, David Breed	Marion, Indiana
Locke, Charles Russell	Denver

NAME.	RESIDENCE.
Low, Besse	Denver
MacIntyre, Mary	Brookline, Mass.
McAndrew, Mary	Boulder
McBride, Edward Henry	Brockton, Mass.
McCabe, Nellie Marie	Boulder
McDonald, Gertrude Frances	Victor
McFadden, Robert Morse	Havana, Illinois
McGehee, Mary Wilson	Littleton
McGinnies, Jessie	Boulder
McIntyre, Sidney Jenner	Hotchkiss
McKee, Patrick John	Montrose
McNeil, Sadie Ethel	Boulder
Mackey, John Wallace	Masters
Mallon, Evelyn	Denver
Maloney, Mildred Scott	Denver
Mayfield, Edna	Granada
Meents, Freda	Boulder
Merry, Dola Edna	Durango
Milburn, Cecile Anna	Boulder
Miller, Lewis Israel	Denver
Miller, William Henry	Rifle
Mitchell, Gladys Louise	Greeley
Moore, Helen Lenore	Aspen
Mott, Elizabeth Blanche	Boulder
Murch, Helen Rose	Denver
Nafe, Robert Wallace	Boulder
Needham, Mae Clair	Victor
Nelson, Norris Hoag	Boulder
Nelson, Thomas Lothian	Brush
Nichols, Margaret Estella	Mattison
Nutt, Marian Evangeline	Montrose
Ogle, Norman Leo	Pueblo
Orr, George Vernon	Boulder
Orris, Marian Cameron	Pueblo
Parker, Charles Volney, Jr	Julesburg
Parkhill, Forbes Jesse	Denver
Perreten, Arnold Ervin	Bogard, Missouri
Persons, Thomas George	Pueblo
Peters, Leona Bertha	Longmont

NAME.	RESIDENCE.
Phillips, Nellie Malinda	Boulder
Philpott, Sarah Agnes	Spokane, Washington
Pierce, Horace Hale	Denver
Platts, Harlow Case	Boulder
Pollock, Wells Edwin	Allison
Powars, Frank Gordon	Brighton
Price, Richard Craig	Brush
Printz, Morris	Denver
Pughe, Charlotte	Boulder
Pulliam, Lillian Elizabeth	Loveland
Rainey, Clarence Wager	Pueblo
Read, Hazel	Boulder
Reynolds, Mary Frances	Greeley
Richardson, Elizabeth Scott	Boulder
Richardson, Ivy Rose	Boulder
Ridgeway, Ruth	Boulder
Riedel, Eva McCrumb	Canon City
Riedesel, Nellie	Boulder
Robinson, Mina Viola	Palisade
Rodes, Mary Elizabeth	Boulder
Rohwer, Frank Wilbur	Boulder
Rose, Frank Herbert	Boulder
Ross, Leslie Truesdale	Denver
Rowland, Ben Wright	Boulder
Russell, Ruth Sterling	Boulder
Salberg, Eleanor Josephine	Boulder
Saunders, Clen	Boulder
Sawhill, John Alexander	Boulder
Sayre, Edna Halcyone	Boulder
Scott, Richard McDonald, Jr	Denver
Scouton, Addie Richman	Durango
Sheehan, William Lawrence	Aspen
Sheldahl, Louis Rees	Buena Vista
Sherman, Henry Sterling	Montrose
Shriber, Eva Ruth	Boulder
Shull, Cal Hamilton	Alamosa
Shuman, George Arnold	Boulder
Sillik, Nellie Violet	Englewood
Smith, Barton Edwin	Brush

NAME.	RESIDENCE.
Smith, Blanche Elizabeth	Denver
Smith, Opal	Fowler
Smith, Willard Arthur	Boulder
Smothers, Wall Edward	Boulder
Spring, Walter Lee	Boulder
Standley, Hilda Grace	Nucla
Stewart, William LeRoy	Leadville
Stocker, Ruth	Denver
Stoddard, Edward Olin	Denver
Sullivan, Alice Helen	Grand Junction
Sullivan, Mary Frances	Salida
Sulivan, Helen Elaine	Denver
Swanson, Dora Jennie	Georgetown
Swartwood, Madeline	Boulder
Swindler, Charles P	Dawson Springs, Kentucky
Taylor, Dessie Deane	Red Cloud, Nebraska
Taylor, Ruth Adeline	Boulder
Tennant, Mary Elizabeth	Tollerburg
Terwilliger, Dorothy	Belvidere, Illinois
Tesdell, Edward Juel	Berthoud
Thomas, Charles	Pueblo
Thomas, Hazel	Boulder
Urquhart, Walter Thomson	Boulder
Vaughan, Stanley Chauncey	Cheyenne, Wyoming
Vaughn, Jack Walter	Denver
Voils, Irene	Grand Junction
Walter, Augustine Barbara	Denver
Walter, Frederic Joseph	Denver
Warner, Ethel	Boulder
Warner, Wyllys Edwin	Fort Morgan
Wattle, Ruth Jocelyn	Mancos
Way, Stuart Clark	Denver
Weber, Lester Edmund	Colorado Springs
Weimer, Otto Urban	East St. Louis, Illinois
Weiszer, Frank Andrew	Detroit, Michigan
White, Harold S	Denver
Wickert, Carl Joseph	Boulder
Wild, Claude Charles	Moran, Texas
Wilson, Sylvia Eyre	Montrose

NAME.	RESIDENCE.
Young, Gladys Amelia	Colorado Springs
Ziegler, Effie Claire	Trinidad

—234.

SPECIAL STUDENTS

NAME.	RESIDENCE.
Alexander, Gross Wilbur	Nashville, Tennessee
Bennett, Rama Virginia	Boulder
Bent, Roger Kane	Denver
Bradfield, Elizabeth	Washington, D. C.
Brewer, Clara Adelia	Tampico, Illinois
Burbridge, George Edwin	Platteville
Childs, Richard Austin	Columbia, South Carolina
Cornell, Benjamin David	Louisville
D'Ambrogio, Natalis Joseph Vardemirus	Flushing, New York
Gehrung, Estella Helen	Boulder
Gordon, Amy	Boulder
Harrison, Sam Alexander	Denver
Johnston, Harry Leigh	Boulder
Laforgue, Henriette	Paris, France
McCrory, Pearl Elizabeth	Pittsburg, Pennsylvania
McNabb, James Pierson	Carrollton, Illinois
Marfori, Vicente Rosendo	Kalawang, Philippine Islands
Matthews, Keith Watson	Boulder
Morrissey, Mary Agnes	Brooklyn, New York
Phillips, Florence Pearl	Cozad, Nebraska
Rushton, Helen Leah	Indianapolis, Indiana
Savage, Elizabeth Means	Boulder
Spray, Mildred Annetta	Denver
Stoddard, Elizabeth R	Boulder
Swayne, Ida Loyd	Boulder
Watkins, Clay Celia	Crawfordville, Indiana
Wilney, August	Boston, Massachusetts

—27.

COLLEGE OF ENGINEERING

SENIOR CLASS

NAME.	COURSE.	RESIDENCE.
Armor, Claude Arnett	E.E	Denver
Barker, Lawrence Ward	C.E	Boulder
Blair, Tom Arthur	C.E	Montrose
Beresford, Robert Morrison	C.E	Boulder
Bonner, Clyde Rayburn	C.E	Boulder
Brace, Porter Hiscock	E.E	Denver
Bradfield, Louis George	M.E	Greeley
Cavers, Robert Lionel Gilbert	E.E	Denver
Christian, William Jacob	M.E	Denver
Dahms, Robert Albert	C.E	Park Rapids, Minnesota
Doerner, Henry Alfred	Ch.E	Denver
Elliott, Preston Greene	E.E	Boulder
Ellsberg, Harry	C.E	Denver
Eveland, George Harmon	E.E	Boulder
Forsythe, Carl Payne	C.E	Boulder
Gartland, Frank Joseph	E.E	Denver
Gleim, Ernest John	E.E	Denver
Hall, John Temple	E.E	Boulder
Irish, Willis Luther	E.E	Boulder
Jeffrey, William Maxson	C.E	Boulder
Kettle, James Robert Patrick	C.E	Westcliffe
Koenig, Samuel Adolph	E.E	Golden
List, Alvin Fred	E.E	Denver
McKinney, Harry David	E.E	Pueblo
Merrill, James Lynn	C.E	Fort Collins
O'Connell, William Ward	C.E	Georgetown
Purmort, George Ely	C.E	Salida
Randell, William Edward	E.E	Pueblo
Rehm, Herbert Eugene	C.E	Indianapolis, Indiana
Royce, Clarence Louis	C.E	Denver
Russell, Austin Phelps	C.E	Boulder
Sawyer, Arthur Lathrup	C.E	Greeley
Schwer, Gus Leo	M.E	Pueblo
Short, Clarence Robert	C.E	Lime

NAME.	COURSE.	RESIDENCE.
Swift, Frank William	E.E	Denver
Unger, Max Samuel	Ch.E	Florence
Uyeda, Seizo	E.E	Fukuoka, Japan
Watrous, Wallace Edwin	E.E	Monte Vista
Wheatley, Walter Hannum	C.E	Denver
White, Raymond Merriman	M.E	Longmont
Wilhite, John Frank, Jr	C.E	Blythesville, Arkansas
Winter, Boyd Wahl	E.E	Santa Fe, New Mexico

—42.

JUNIOR CLASS

NAME.	COURSE.	RESIDENCE.
Alling, Arthur Rich	C.E	Fort Collins
Baldock, R. Hugh	C.E	Starkville
Barrier, Grover Watkin	E.E	Glenwood Springs
Bitner, Albert Henry	M.E	Boulder
Blomgren, Walter Edward	C.E	Boise, Idaho
Borden, Philip Sheridan	E.E	Boulder
Bunger, Howard Phelps	C.E	Edgewater
Burton, William Ernest	E.E	Medicine Lodge, Kansas
Cargo, Robert Wayne	M.E	Denver
Clark, Cecil Swanger	C.E	Boulder
Clark, Everett Francis	M.E	Denver
Davis, Joseph Campbell	E.E	Sedgwick
DeMarais, Albert Edward	Ch.E	Aspen
Diehl, Clarence James	E.E	Mulhall, Oklahoma
Doland, James Joseph	C.E	Denver
Downing, Roderick Lyle	C.E	Lamar
Eckel, Clarence Louis	C.E	Denver
Fiske, Rogers Allen	M.E	Santa Fe, New Mexico
Galloway, Gerald Fogarty	C.E	Boulder
Giger, Joe	E.E	Weldona
Glendinning, James Inglis, Jr	M.E	Denver
Griffin, John Homer	C.E	Denver
Grossbard, Sol	E.E	Brooklyn, New York
Haas, Joseph Rolland	E.E	El Paso, Illinois
Haley, John Leslie	E.E	Boulder

NAME.	COURSE.	RESIDENCE.
Hamilton, William Coulter	C.E.	Boulder
Hartman, Warren Peter	M.E.	Longmont
Jesse, August Lawrence	Ch.E.	Akron
Jones, Benjamin Franklin	C.E.	Boulder
Kerr, Henry Hamilton	E.E.	Denver
Leisten, Henry Paul	M.E.	Aspen
Lines, George Emery	C.E.	Salida
Lynch, Charles Ramsdell	E.E.	Denver
McKelvey, Clinton Fiske	E.E.	Denver
Maires, Lewis Kelsey	C.E.	Denver
Mallory, Walter Frank	M.E.	Boulder
Mayne, Earl Leslie	C.E.	Denver
Meyer, Ralph Elwood	E.E.	Denver
Moreland, Alfred David	E.E.	Boulder
Morrill, Benjamin Franklin, Jr.	C.E.	Boulder
Morris, Earl Silvester	C.E.	Pueblo
Moyle, Matt William	M.E.	Boulder
Olin, Joe Cotton	E.E.	Denver
Ornauer, Raymond Arthur	E.E.	Denver
Redding, Frank Allen	E.E.	Idaho Springs
Sells, Charles Harvey	C.E.	Boulder
Shattuck, Lucien Hunt	C.E.	Boulder
Slye, John Dallison	C.E.	Boulder
Snyder, Clarence Lane	E.E.	Denver
Soderstrom, Carl Axel	E.E.	Denver
Stewart, Eugene	Ch.E.	Golden
Sweitzer, Leonard Edward	E.E.	Delta
Teter, Roy George	C.E.	Fairplay
Weber, Walter Raymond	C.E.	Denver
White, Edward Divine	C.E.	Cripple Creek
Wilkinson, Ephraim Bailey	C.E.	Boulder
Wilkinson, Jack Russell	C.E.	Boulder

—57.

SOPHOMORE CLASS

NAME.	COURSE.	RESIDENCE.
Amoss, Lindsay V	E.E.	Windsor
Beresford, Lester Treat	C.E.	Boulder
Bergheim, Milton Nachman	E.E.	Boulder

NAME.	COURSE.	RESIDENCE.
Beverly, Frank Ferdinand	M.E.	Harvard, Nebraska
Blackwell, Lee Robinson	C.E.	Fruitdale, South Dakota
Blythe, Samuel Judson, Jr	E.E.	Rushville, Missouri
Boring, Maynard McKay	E.E.	Denver
Canfield, Robert Hawthorne	C.E.	Denver
Carnahan, Lawrence Barrett	M.E.	Grand Junction
Charde, William Newell	C.E.	Boulder
Christian, Ben	M.E.	Denver
Condit, Harrison Smith	E.E.	Boulder
Conley, John Edward	Ch.E.	Lafayette
Cooke, Stanley Shields	M.E.	Denver
Costello, James Russell	C.E.	Denver
Davis, Dean Holden	M.E.	Longmont
Dohner, Guy Ketterman	C.E.	Loveland
Duthie, Robert Campbell	C.E.	Denver
Erwin, Edward Manton	E.E.	Denver
Fankhauser, Ernest John	Ch.E.	Durango
Flach, John Jacob	E.E.	Boulder
Floyd, Faye Noble	E.E.	Trinidad
Gates, Irving George	Ch.E.	Grand Junction
Gilland, Laurence Egbert	E.E.	Denver
Glendinning, Edward Wood	E.E.	Denver
Good, Edison B	M.E.	Harriman, Tennessee
Hadley, Thomas	C.E.	Boulder
Harrison, Horace Lippincott	M.E.	Denver
Henderson, Richard Henry	Ch.E.	Boulder
Hobson, David Anthony	E.E.	Denver
Hubbard, Erle Emerson	E.E.	Glenwood Springs
Ichinose, Hajime	M.E.	Denver
Judelovitz, Sam	C.E.	Denver
Lindsay, Richard Wander	C.E.	Denver
Lummis, Doran Wohlfarth	C.E.	Cheyenne, Wyoming
McCary, Phillip Henery	M.E.	Grand Junction
McNeil, Elbert Kerr	C.E.	Boulder
Macomber, Kenneth Adams	E.E.	Denver
Mann, Clair Victor	C.E.	Boulder
Martensen, Morris	M.E.	Edgewater
Martin, Stratton Andrew, Jr	E.E.	Denver
Martin, William Edgar	E.E.	Denver

NAME.	COURSE.	RESIDENCE.
Means, John Siemon	M.E.	Denver
Miller, Charles	E.E.	Sheridan, Wyoming
Miller, Earnest Clifford	C.E.	Boulder
Morgan, Nathan Wilson	C.E.	Boulder
Murch, Henry Boynton	C.E.	Denver
Nakano, Ryotaro	E.E.	Matuyuma, Japan
Nelson, George Andrew	E.E.	Windsor
Overbey, Joseph Franklin	C.E.	Iowa Park, Texas
Park, Robert Orchard	M.E.	Denver
Park, John Charles	C.E.	Greeley
Patton, Harlan Virgil	C.E.	Senatobia, Mississippi
Paul, Lesley Coolidge	C.E.	Denver
Peterson, Ernest Frederick	E.E.	Greeley
Prouty, Frank Harrison	C.E.	Denver
Quentin, Herman Post	E.E.	Denver
Rank, Raymond Childs	E.E.	Boulder
Redd, Samuel Bertram	C.E.	Denver
Reid, Hugh Applegate	E.E.	Denver
Robison, Ralph Turner	E.E.	Fort Morgan
Samuelson, Arthur Clyde	C.E.	Salt Lake City, Utah
Shenk, Victor Archibald	C.E.	Denver
Shimeall, Karl Wallace	Ch.E.	Goodland, Kansas
Small, Sidney Smith	C.E.	Denver
Smith, Paul Vanderlip	M.E.	Colorado Springs
Sunnergren, Edwin	E.E.	Denver
Taylor, Neil Billings	C.E.	Greeley
Tracy, Will Aaron	M.E.	Pueblo
Vallet, Victor Emil	C.E.	Lazear
Victory, Thornton Maltby	E.E.	Santa Fe, New Mexico
Walker, Edward Smith	M.E.	Hinsdale, Illinois
Whitney, Earle Sproute	E.E.	Rollinsville
Whitney, Paul Brooks	C.E.	Denver
Wilson, Maurice Spillard	C.E.	Denver

—75.

*FRESHMAN CLASS

NAME.	RESIDENCE.
Abbett, Henry Brown	Brighton
Ashley, Rea Ernest	Denver
Bach, Walter Leo	Denver
Baker, Fred Harrison	Fort Morgan
Belser, Carl	Boulder
Bennett, Ralph Edwin	Pueblo
Billington, Ronald Vedder	Denver
Bomgardner, Henry Isaac	La Junta
Brown, Charles Matthew	Denver
Campbell, Donald Atwood	Denver
Campbell, George Miller	Manitou
Casey, Robert	Boulder
Clauser, Asa Ben	Denver
Coffey, Alfred Leo	Brighton
Cox, Howard Everett	Colorado Springs
Craig, Harvey Clarence	Boulder
Dillon, Lee Somerville	Boulder
Dillon, Malcolm White	Boulder
Dungan, Quentin Randolph	Boulder
Dunn, Paul Joseph	Olathe
Fabling, Harry Creed	Denver
Flanagan, Victor Evans	Canon City
French, Rexford Mohrhard	Trinidad
Gibson, Horace Foster	Boulder
Glick, George Baum	Boulder
Goemann, John Frederick	Tecumseh, Nebraska
Goodner, Charles Roy	Rocky Ford
Greene, Adelbert Jay	Arvada
Greene, John Fewlass	Denver
Greenman, Eric Raymond	Pueblo
Grigsby, John Ralph	Wray
Hall, Ralph Johnson	Denver
Hall, Wilfred McGregor	Denver
Hanson, Edgar Louis	Oklahoma City, Oklahoma
Heilman, Edward	Monte Vista

*Freshman Engineering students are not classified as to course.

NAME.	RESIDENCE.
Hetrick, Clifford	Longmont
Hodges, James Seymour	Boulder
Idelson, Michael Norman	Denver
Johnson, Joseph Buskirk	Denver
Johnson, Levant	Georgetown
Kaune, Henry Eugene	Santa Fe, New Mexico
Kinkaid, Roy Marvin	Houston, Texas
Laramey, Scott Gard	Fowler
Lofton, Joseph Bernard	Washington, D. C.
Logan, Arthur Charles, Jr	Washington, D. C.
Lounsbery, Charles Edwin	Norwood, Ohio
Lyster, Arthur Frederick	Greeley
McBride, Paul Francis	Goodland, Kansas
McCaffrey, Harold Winfield	Denver
McClintock, Clyde Hirsch	Cripple Creek
McFerson, William Henry	Boulder
Manooshian, Stephen James	Malatia, Turkey
Mansbach, Abraham Alvin	Trinidad
Mathew, Steere de Montfort	Denver
Morrison, Barrett Whitney	Denver
Mosher, Marion Aden	Gypsum
Murphy, James Melchole	Grand Junction
Nairn, John Meryl	Boulder
Nelson, Walter Kenneth	Grand Junction
Nichols, Wylie Livingston	Council Bluffs, Iowa
Noble, Raymond Charles	Lafayette
Nylander, Isaac Arthur	Leadville
Olson, David Arvid	Denver
O'Neill, Felix Leo	Denver
Patterson, Clarence Albert	Denver
Rapp, Roy Lee	Denver
Raymond, Richard Randolph	Collierville, Tennessee
Reinhold, Fred Eyre	Montrose
Rennie, Waldo Edward	Denver
Richardson, Robert Mark, Jr	Craig
Ritchie, Ellsworth Arthur	Lancaster, Wisconsin
Robertson, Frank W	Colorado Springs
Rogers, Harry Francis	Meridian, Idaho
Russell, Marvin Howard	Canon City

NAME.	RESIDENCE.
Sawyer, Wilfred David	Greeley
Scheffel, Carl Ludvig Fred	Grand Island, Nebraska
Seelye, Stuart Nevin	Pueblo
Shaffer, Arthur Luther	Denver
Sherman, Fred	Denver
Sherrill, Marcus Henry	Denver
Shimeall, Herbert Ray	Goodland, Kansas
Skerry, Leslie Marshal	Denver
Smith, Roy Wesley	Grand Junction
Strock, Morris Sperry	Denver
Tashima, Yoshio	Denver
Tour, Sam	Pueblo
Waltermire, Kenneth Larkins	Edgewater
White, Kenneth Ingram	Boulder
Winner, William Lane, Jr	Boulder
Wolf, Clayton Samuel	Fort Collins
Worley, Jay Borland	Holyoke

—91.

SPECIAL STUDENTS

NAME.	RESIDENCE.
Littlefield, Virgil Harrison	Denver
Trowbridge, Eugene L	Denver

—2.

SCHOOL OF MEDICINE

FOURTH-YEAR CLASS

NAME.	RESIDENCE.
Block, Leon	Los Angeles, California
Burket, Robert Smith	Denver
Cary, Guy Clifton, B.A	Boulder
Cecchini, Augustine Santini	Denver
Clow, Jean B	Evergreen
Craighead, Joseph Wiley	Uniontown, Alabama
Craner, George Edward	Burley, Idaho
Cullen, Frederick John, Ph.G	Indianapolis, Indiana
Darrow, Cecil Howard	Elwood, Indiana
De Vries, Albert	Platte, South Dakota
Drinkwater, Ray Laurence	Denver
Eakins, Clemens Frankiln	Blakesburg, Iowa
Fezer, Florence	Greeley
Fitzsimmons, Charles Erasmus	Denver
Gwinn, Lawrence Miles	Victor, Iowa
Haskell, Edward Earle	Alexandria, Minnesota
Hills, Carl Clifford	Boulder
Hills, Whitford Carl	Denver
Hotchkiss, Walter Kendrick	Denver
James, William D	Denver
Johnson, William Elijah	Cookville, Texas
Kemble, Earl Wallace	Golden
Kindall, Lloyd Elmer	Paonia
Kennelley, Frank Alair	Longmont
Kindig, Zoe Zita	Denver
La Croix, Ray Kruse	Denver
Luckie, James Buckner	Birmingham, Alabama
McKell, William Scott	Chillicothe, Ohio
McLauthlin, Carl Addison, B.A	Denver
Marshall, Linn Bayard	Portland, Maine
Mitchell, William Earl	Vallejo, California
Morse, Roy Adelbert	Kimberly, Idaho
Mugrage, Edward Rossiter, M.A	Denver
Newton, Edward Kellan	Crown Point, Indiana

NAME.	RESIDENCE.
Nordby, Frederick Jorgen	Boise, Idaho
Passover, Lucy Lloyd	Englewood
Pierce, Horace F	Santa Barbara, California
Rapp, John Henry	La Junta
Robb, William John	Swannick, Illinois
Shea, Robert Macfeely	Denver
Shisler, John William	Miami, Florida
Stenhouse, Henry Merritt	Denver
Stiffler, Martin Luther, B.A	Salem, Ohio
Stuver, Henry William	Denver
Swaggart, Luman Birch	Denver
Swartz, Fred George	Denver
Symon, William Gardiner	Denver
Taylor, Ray Robinson, B.A	Pueblo
Vivian, Charles Smiley	Denver
Walker, George S	New Haven, Connecticut
Waring, James J	Savannah, Georgia
Wells, James William, B.A	Denver
Whitmore, David Paul	Alliance, Ohio

—53.

THIRD-YEAR CLASS

Archibald, Edward Glenn	Boulder
Boeck, Albert Byron	Boise, Idaho
Cooper, Henry Sisson, B. A	Denver
Harley, Elmer	Hot Springs, Arkansas
House, Lewis Clinton, B.A	Bicknell, Indiana
Knuckey, Clyde Thomas, B.A	Denver
Kopciowsky, Anna	Denver
Langdon, George W	Buena Vista
Mishkind, Alfred Jacob	Denver
Morrish, Ross William, B.A	Windsor
Mosher, Walter Frederic, B.A	Lansing, Michigan
Murray, Edward James, B.A	Pawtucket, Rhode Island
Norris, Joseph Patrick, B.A	Denver
Shapiro, Joseph Max	Denver
Talbot, Robert Emmett	Denver

—15.

SECOND-YEAR CLASS

NAME.	RESIDENCE.
Ashley, Glaister Herod	Boulder
Atkinson, Thomas Ernest	Greeley
Bancroft, George William	Colorado Springs
Bigelow, May Tower, B.L	Denver
Lunsford, Charles Julian	Nashville, Tennessee
Salberg, Joseph Brenald	Boulder
Savage, Joseph Carr	Denver
St. Clair, Charles A., B.A	Glenwood Springs
Woods, James Edward, B.A	York, Nebraska

—9.

FIRST-YEAR CLASS

NAME.	RESIDENCE.
Bluemel, Charles Sidney	Rugby, England
Bouslog, John Samuel	Boulder
Campbell, William Ralph	Boulder
Cohenour, Leo Bertram	Denver
Davies, William Walter, Jr., B.S	Delaware, Ohio
Gjellum, Arthur Blaine	Fowler
Groom, Robert John	Boulder
Lynch, Elwood Best, B.A	Leadville
Macomber, Harold George	Denver
Palmer, Frank Ernest	Boulder
Reed, Walter Kellogg	Boulder
Streamer, Charles Walker	Boulder
Swartwood, Harold Poe	Waseca, Minnesota
Ullery, Fred Lee	Phoenix, Arizona
Whitehurst, DeLany	Greenville, Texas

—15.

SPECIAL STUDENTS

NAME.	RESIDENCE.
Kemper, Constantine, B.A	Clarksburg, West Virginia
Ross, Edith Ketler	Pittsburg, Pennsylvania
Teplitzky, Leo	Tamboff, Russia

—3.

SCHOOL OF PHARMACY

SECOND-YEAR CLASS

NAME.	RESIDENCE.
Roberts, John Lewis	Idaho Springs
Rosenblum, Armin Nathan	Pueblo

—2.

FIRST-YEAR CLASS

NAME.	RESIDENCE.
Cain, Edward Everett Hale	Boulder
Irish, Ilah Emily	Des Moines, Iowa
Lloyd, Kenneth Watson	Rifle
Naugle, Benjamin Eben	Sterling
Staples, Irene Foster	Osceola, Wisconsin
Welles, Charles Harold	Divernon, Illinois
Ziegler, Maurice Miller	Lancaster, Wisconsin

—7.

SPECIAL STUDENTS

NAME.	RESIDENCE.
Harrington, Rex	Denver
Teeter, Audrey	Garfield, Oklahoma

—2.

SCHOOL OF LAW

THIRD-YEAR CLASS

NAME.	RESIDENCE.
Andrus, Ralph Roscoe	Denver
Bond, Eugene Alva	Royston, Georgia
Crawford, Paul William	Pueblo
Crouter, Errol Louis Edgerton	Wheatland, Wyoming
Culver, George Warren, B.A	Fort Collins
Drinkwater, Russell Robert	Denver
Dunklee, Edward Vaughan, B.A	Denver
Elwell, Lyman Timothy	Pueblo
Giacomini, Lawrence George, B.A	Sterling
Gutknecht, John, B.A	Chicago, Illinois
Kabell, Louis, Jr	Vernal, Utah
Kelly, Leo Patrick	Pueblo
Kemp, Frank Alexander, Jr	Denver
Lannon, John Albert	Pueblo
McClelland, James Robert	Idaho Springs
Millikin, Eugene Donald	Hamilton, Ohio
Mills, Jared Warner, Jr., B.A	Denver
Morris, Robert Charles	Pueblo
Odlum, Arnold Asbury	Boulder
Parrish, Jay Megran	Kearney, Nebraska
Pine, Frederick Walter	Miami, Florida
Pulliam, Matthew Mullins	Tuscaloosa, Alabama
Rigby, Charles Percy	Meeker
Storer, Todd Clement, B.A	Pueblo
Swain, George Warner	Chicago, Illinois
Valdez, Antonio Jose Nerio	Del Norte

—26.

SECOND-YEAR CLASS

NAME.	RESIDENCE.
Atkinson, John Owen	Montrose
Barbrick, John Timothy	Pueblo
Bonner, Beryl Mary	Leadville
Brodsky, Josef	Denver

NAME.	RESIDENCE.
Bryant, Emmett Earl	Montrose
Cadwallader, Roy Louis	Des Moines, Iowa
Carlson, Milton	Masters
Cole, Thomas Jefferson	Joplin, Missouri
Divisek, Frank Otto	Cedar Rapids, Iowa
Dolan, Frank Fleming	Montrose
Dotson, Frank B	Denver
Ferguson, John Duncan	Stoneham
Fitch, Paul Raymond	Sterling
Gentry, Letcher Reeves	Meeker
Girling, Jack Robert	Colorado Springs
Gundrum, Richard Warren, B.A	Denver
Heckman, Scott William	Grand Junction
Hessick, Delbert Alexander	Florence
Hooker, Oliver Wolcott	Hayden
Hutchinson, Dudley Isom	Oxford, Mississippi
Johnson, Eric	Berthoud
Jones, Charles Crockett	Flagstaff, Arizona
Keating, Herbert Edward	Sterling
Kingsland, Edwin Russell	Denver
Luby, William Harold	Minturn
McConnell, Giley Richard	Fort Lupton
Martin, Dean Arthur	New Castle, Indiana
Mayne, George Herbert	Council Bluffs, Iowa
Odlum, Floyd Bostwick	Boulder
Olson, Arthur Leonard	Rye
Parker, Della Leigh	Denver
Payne, Ira Daniel	Loveland
Rachofsky, David Ezekiel	Durango
Seaman, Herman Wilson	Boulder
Slattery, Frank Earl	Silverton
Smith, Amasa Charles	Boulder
Stemen, David Christian	Denver
Swerer, George Heber	Boulder
Underhill, Elam B	Collbran
Varney, Frederick William	Denver
Walker, Dan Watts	Boulder
Wallace, Willard Wright	Fairplay
Williams, Perry Elbridge	Golden

NAME.	RESIDENCE.
Woodbury, Joseph Francis	Greeley
Wright, Earl Edwin, B.A	Denver

—45.

FIRST-YEAR CLASS

NAME.	RESIDENCE.
Allen, Frank DeWitt	Fort Morgan
Anderson, Harry Frederick	Denver
Ashley, Thomas Cooley	Saguache
Bedortha, Luther Eddy	Boulder
Boeke, Richardt Miles	Riverton, Wyoming
Doughty, Charles Linton, Jr	Lamar
Johnson, Rudolph R. B	Niwot
Kaiser, Carl Albert	Breckenridge
Lowe, Irwin Merrill	Glenwood Springs
McMillin, Homer Stroud, B.A	Colorado Springs
Meyers, Floyd	Rensselaer, Indiana
Morison, Norman Ramsay	Traer, Iowa
Mors, Julius	Boulder
Phelps, Allen Cleveland	Denver
Rathvon, Nathaniel Peter	Boulder
Reed, Margaret Howell	Boulder
Sauter, Ray Lee	Burlington, Iowa
Seeman, Bernard Johnson, B.A	Denver
Shaw, George Hamlin	Houlton, Maine
Sutley, Melvin Lockett	Center
Tarbell, Robert Raymond	Saguache

—21.

SPECIAL STUDENTS

NAME.	RESIDENCE.
Lewis, Ralph H	Windsor
Perkins, Lewis Mayne	Durango
Reynolds, Charles Monroe	Loami, Illinois
Smith, Robert James	Greeley
Vidler, Robert Sandeman	Golden

—5.

SUMMER SESSION STUDENTS, 1912

NAME.	RESIDENCE.
Adams, Florence Eugenia	Jerseyville, Illinois
Akers, Susan	Richmond, Missouri
Allday, Robert Egbert	Atlanta, Texas
Andrews, Jessie	Austin, Texas
Avery, Frederick Tony	Chicago, Illinois
Avery, William Watson	Lake City
Babb, Virginia Elizabeth	Wichita, Kansas
Baker, Florence Lillian	Meeker
Baker, Hilton Vaughn	Boulder
Bates, Nelle Eugenia	Berthoud
Bates, William Zole	Claude, Texas
Beamer, Bess	Medoc, Missouri
Beamer, Maude	Medoc, Missouri
Beatty, Edward	Warrensburg, Missouri
Bedortha, Luther Eddy	Boulder
Beech, Frances	Pittsburg, Pennsylvania
Beech, Lida	Pittsburg, Pennsylvania
Bennett, Rexie Ellen	Boulder
Bennett, Richmond Oliver	Buffalo, Texas
Berlin, Herbert Augustus	Waketa, Oklahoma
Birdick, Arthur Almon	Boulder
Blair, Mildred	Marietta, Georgia
Blair, Tom Arthur	Montrose
Blake, Alice A	Trementina, New Mexico
Blake, Helen	Denver
Blakey, Susie	Denver
Bliss, Frederick Van Ostrand	Boulder
Bomgardner, Henry	La Junta
Bouslog, John Samuel	Boulder
Bouton, Craig Miller	Breckenridge
Bradburn, Grace Caroline	Broken Bow, Nebraska
Briggs, Zelma Emeline	West Point, Nebraska
Broughton, Jennie Belle	Conway, Kansas
Brown, Benjamin Franklin	Boulder
Brown, Clara Maude	Swallows
Browne, Carrie Olive	Omaha, Nebraska

NAME.	RESIDENCE.
Browning, Clio Ethel	Decatur, Illinois
Browning, Rite	Decatur, Illinois
Buller, Jacob P	Henderson, Nebraska
Burke, Maude Estella	Boulder
Burke, Ruth Genevieve	Boulder
Burritt, Elizabeth	Ainsworth, Nebraska
Campbell, Mary E	St. Joseph, Missouri
Canfield, Sarah	Tecumseh, Nebraska
Carey, Harriet Elizabeth	Denver
Carr, Olive Virginia	Meeker
Carter, Carroll Scott	Wellington, Texas
Chambers, Kathrine Lee	New York City
Chase, John Samson	Denver
Clarke, Alice Mary	Wellington, Kansas
Clarke, Grace D	Boulder
Coar, Sada Christiana	Pittsburg, Pennsylvania
Collins, Clayton Irving	Holly
Conway, Marion Louise	Warrensburg, Missouri
Cook, Mary Frances	Marianna, Arkansas
Cooper, Flora Evelyn	Council Bluffs, Iowa
Copps, Phebe Stoddard	Boulder
Cornell, Benjamin David	Louisville
Cotton, Bee W	Doniphan, Missouri
Counts, Hilda	Boulder
Cowell, Edward Wier	Denver
Crary, Ruth Naomi	Boulder
Crisp, William H	Denver
Cronbaugh, Naomi	Marengo, Iowa
Cunningham, Natalie	Abilene, Texas
Daniels, Winifred Claire	Brush
Davis, Dean Holden	Longmont
Davis, George Clarence	Hamilton, Indiana
Davis, Laura Marguerite	Sterling
Denning, Robert Lee	St. Joseph, Missouri
Deupree, Sarah Curtis	Texarkana, Arkansas
De Weese, Cama Elizabeth	Boulder
Dillon, Florence Gertrude	Detroit, Michigan
Duffy, Miriam Miller	Avalon, Pennsylvania
Durkee, Florence Ella	St. Paul, Minnesota

NAME.	RESIDENCE.
Dyke, Estelle Darrah	Boulder
East, James Montgomery	Tonasket, Washington
Edwards, Ellis Lincoln	Holton, Kansas
Elder, Loula Emma	Granite, Oklahoma
Elder, Sue	Caruthersville, Missouri
Elliott, Joel Wallace	Belton, Texas
Emerson, Ethel	Joplin, Missouri
Eyre, Mary Brooks	Denver
Fairchild, Grace Margaret	Victor
Faus, Frankie	Boulder
Fenner, Helen Elizabeth	Boulder
Fernald, Hester	Boulder
Fleming, Henry James	Sterling, Kansas
Fonda, Catharine Farrell	Boulder
Ford, Mary Frances	Columbia, Missouri
Foster, Bessie	Sterling, Nebraska
Foster, Ward Harold	Trinidad
Freeland, Evelyn	Bristow, Oklahoma
Friesen, George W	Henderson, Nebraska
Ganson, Rose Elizabeth	Boulder
Gentry, Letcher Reeves	Meeker
Gerber, Frances	Butler, Pennsylvania
Gillaspie, Carbon	Boulder
Gilleland, Nanetta	Pueblo
Goodykoontz, Colin Brummitt	Boulder
Gorman, Emma	Bartlesville, Oklahoma
Graves, Fannie	Georgetown, Texas
Green, Alta May	Olathe, Kansas
Green, Minnie Clyde	Effingham, Kansas
Greenen, Lena Weber	Boulder
Greenen, Rose Carmin	Boulder
Groesbeck, Hazel	Boulder
Groom, Emma	Boulder
Grossbard, Sol	Brooklyn, New York
Guise, Lucy Mabel	Gold Hill
Hale, Ernest Thomas	Oak Creek
Hamilton, Lu	Texarkana, Arkansas
Hamilton, Lucy	Chico, Texas
Hammers, George Mullen	Leadville

NAME.	RESIDENCE.
Hankins, Margaret Marie	Boulder
Hayden, Ada	Ames, Iowa
Hayward, Grace Althea	Lawrence, Kansas
Heaton, Wilbur McKean	Pueblo
Henderson, Richard Henry	Boulder
Henshaw, Marl Millett	Evansville, Indiana
Hensley, George Leroy	Lakin, Kansas
Hensley, James Albert	Buffalo, Kansas
Herr, Ada May	Wellington, Kansas
Hill, Minnie Olive	Keokuk, Iowa
Hinds, Norman Ethan Allen	Denver
Hodges, Belle	Bovina, Texas
Hodges, Benjamin Franklin	Bovina, Texas
Hoffmaster, Helen Creichton	Boulder
Holaday, Horace Asa	Moscow, Idaho
Holaday, Mrs. Horace Asa	Moscow, Idaho
Holdcroft, Mary Nesbitt	Randolph, Nebraska
Hubbard, Mae E	Boulder
Inglish, Leona	Bixby, Oklahoma
Irish, Ilah Emily	Boulder
Irminger, Emma May	Liberty, Missouri
Irwin, William Archibald	Denver
Isle, Walter Whitfield	McLoud, Oklahoma
Jackson, Bethell Howard	Boulder
Jackson, Helen	Denver
Jewett, Emma Frances	De Soto, Kansas
Johnson, Averill Chauncey	Boulder
Johnson, Hazel Athene	Pawnee City, Nebraska
Johnson, Levant	Georgetown
Johnson, Lora	Stillwater, Oklahoma
Johnson, Mary Ethel	Boulder
Jones, Helen Liela	Meeker
Keller, Zita Eileen	Culbertson, Nebraska
Kendall, Claribel	Boulder
Kennedy, Rose Elizabeth	Denver
Kennicott, Lillian May	Boulder
Kiker, Grace	Boulder
King, Anne H	Cincinnati, Ohio
Kirkpatrick, Ella May	Oconto, Nebraska

NAME.	RESIDENCE.
Kollmansperger, Gertrude	Iowa Falls, Iowa
Lacy, Louise	Rifle
Lakenan, Mary Emily McCue	Boulder
Lathrop, Frances Emma	Waukon, Iowa
Lauterbach, Charles Edward	Bushnell, Illinois
Lawson, Susan B	Richmond, Missouri
Lee, Mary Deming	Glen Ellyn, Illinois
Lee, Ping	Shanghai, China
Letts, Louise	Sedalia, Missouri
Letts, Martha M	Sedalia, Missouri
LeVeque, Norma Ebolie	Boulder
Lewis, Edwin	Sedgwick
Libby, George Franklin	Denver
Libby, John Hermiston	Boulder
Lindstrom, Mary E	Sterling
Locke, Suda	Vienna, Illinois
Lovin, Lucia Maria	Hampton, Iowa
Lummis, Doran Wohlfarth	Cheyenne, Wyoming
Lux, George John	Boulder
Macaulay, Frederick Robertson	Boulder
Mackey, Ella R	Junction City, Kansas
Mangus, Ethel	Moberly, Missouri
Mann, Clair Victor	Boulder
Mattice, Ben	Pueblo
Mattice, Eugene	Pueblo
Maxwell, Esther Anna	Champaign, Illinois
Mays, Ella	Faucett, Missouri
McCaw, John A	Denver
McClelland, James Robert	Idaho Springs
McCoy, Cina	Muscatine, Iowa
McCullough, Albert Steele	Boulder
McGrath, Florence Kathleen	Boulder
McInnch, Julia Nellie	Auburn, Nebraska
McNulty, Mary Theresa	Carbondale
Miller, Ann Wilson	Culbertson, Nebraska
Miller, Earle Brenneman	Boulder
Mills, Ruth Esther	Denver
Mints, Lloyd Wynn	Boulder
Mitchell, Lela	Edmond, Oklahoma

NAME.	RESIDENCE.
Monaghan, Daniel G	Denver
Moore, Bula Grace	Moberly, Missouri
Morris, Earl Halstead	Farmington, New Mexico
Murphy, Ella Josephine	Fort Worth, Texas
Murphy, Lou	Denver
Nafe, Helen	Boulder
Nafe, Mildred Whitney	Boulder
Nelson, Norris H	Boulder
Nerud, Anna	Minatare, Nebraska
Nichols, Percy Harold	Racine, Wisconsin
Nicholson, Mary Holmes	Tulsa, Oklahoma
Ogden, Hattie Ruth	Genoa, Nebraska
Oliver, Lucile Elizabeth	Breckenridge, Missouri
Olson, Esther Mathilda	Pueblo
Osborne, Elizabeth	St. John, Kansas
Overbey, Joseph Franklin	Iowa Park, Texas
Palmer, Frank Ernest	Denver
Parker, Mary Adelia	Texarkana, Arkansas
Patton, Rosamond Edith	Gold Hill
Pearson, Clarence	Cripple Creek
Peirano, Ruth Rose	Wilson, Kansas
Penn, Cora Pearl	Abilene, Texas
Petty, Charles Odell	Beaver Crossing, Nebraska
Phillips, Birdie E	Boulder
Pinger, Lulu Maude	Leadville
Platts, Harlow Case	Boulder
Plumb, Mae Antoinette	Longmont
Plummer, Margaret	Wabash, Indiana
Price, Emma J	Denver
Price, Lucian Lee	Rotan, Texas
Probst, Doris Elizabeth	Tulsa, Oklahoma
Prosser, Georgiana	Cheyenne, Wyoming
Rank, Mollie Faye	Boulder
Ray, Stella	Danville, Illinois
Reath, Sarah Elizabeth	Boulder
Reed, Walter Kellogg	Boulder
Reid, Charles C	Denver
Reid, Robert Lee	Keokuk, Iowa
Rentschler, Elsie Blanche	Denver

NAME.	RESIDENCE.
Richert, David Henry	Newton, Kansas
Roberts, Lewis Dillon	Revere, Missouri
Rodefer, Mary Frances	Boulder
Rose, Frank Hubeck	Weir City, Kansas
Ross, Robert Alexander	Grand Junction
Roth, Ralph Frederic	Russell, Kansas
Rowland, Mrs. Charles W	Boulder
Russell, Genevieve	Lexington, Missouri
Russian, Wanda Margaret	Chicago, Illinois
Saiki, Azuma	Iyo, Japan
Salberg, Joseph Brenald	Boulder
Sandusky, Daisy Marguerite	Sterling, Nebraska
Sayre, Anna Belle	Cripple Creek
Schmoll, Hazel Marguerite	Ward
Schwiering, Oscar C	Milwaukee, Wisconsin
Scrutchfield, Irene	Excello, Missouri
Shaffer, Arthur Luther	Fort Collins
Sheldahl, Floy Vivian	Buena Vista
Shope, Samuel Z	Harrisburg, Pennsylvania
Sibbald, Garth E. W	Boulder
Simmons, Marjorie Louise	Boulder
Slater, Lewis Cecil	Boulder
Slusser, Horace Greeley	Boulder
Slye, John Dallison	Boulder
Smick, Caleb William	Oberlin, Kansas
Smith, Harry A	Delta
Smith, Hulah	Boulder
Smith, Lelia May	Hattiesburg, Mississippi
Smith, May Louise	Denver
Smithe, Vera Louise	Caruthersville, Missouri
Snoddy, William Howard	Las Animas
Snyder, Lydia J	Chanute, Kansas
Solomon, Harriet	Keokuk, Iowa
Southwell, Fay	Maitland, Missouri
Spencer, Carrie Minella	Colorado City
Sperry, Charles Stillman, Jr	Boulder
Spykes, Ida	Hulbert, Oklahoma
Stauber, Emily Dowe	St. Joseph, Missouri
Stebbins, Dencie	Tulsa, Oklahoma

NAME.	RESIDENCE.
Steinberg, Eva	Kansas City, Missouri
Stevens, Olive	Milliken
Stilwill, Hiram R	Denver
Stocker, Edith Frances	Muscatine, Iowa
Storey, Olin Kurgeon	Fountain
Swift, Perry Clayton	Kensington, Kansas
Taylor, Edward Ayers	Leadville
Teplitzky, Leo	Boulder
Teter, Roy George	Fairplay
Thatcher, Lloyd Evans	Oregon, Missouri
Thomas, Henry Franklin	Alamosa
Tracy, Sarah Elizabeth	Junction City, Kansas
Trezise, Ethel Irene	Boulder
Trolinger, Bessie	Boulder
Trowbridge, Mary	Boulder
Ullery, Fred Lee	Boulder
Unseld, George Peterkin	Boulder
VanHoose, Grant	Tucson, Arizona
Vernaz, Juanita Colette	Warrensburg, Missouri
Walker, Ida	Denver
Watkins, Clay Celia	Pleasant Hill, Missouri
Weyerbacher, Leah	Boulder
White, Kathleen Marie	Pleasanton, Kansas
Whiteley, Bessie Marshall	Kansas City, Missouri
Whitney, Mabel	Alden, Iowa
Wilkerson, Pearl	Union Star, Missouri
Wilkins, Ralph	Idaho Springs
Wilson, Jean Watson	Detroit, Michigan
Wilson, Jessie Helen	Keokuk, Iowa
Winner, Willam Lane, Jr	Boulder
Woods, James Edward	York, Nebraska
Wright, Charlotte Marie	Union Star, Missouri
Wright, Zella Muriel	Boulder
Yeoman, Benjamin Franklin	Delta
Zilly, Louise	Champaign, Illinois

—305.

*SUMMARY OF ATTENDANCE

GRADUATE STUDENTS		70
COLLEGE OF LIBERAL ARTS—		
Seniors	99	
Juniors	132	
Sophomores	179	
Freshmen	234	
Special Students	27	671
COLLEGE OF ENGINEERING—		
Seniors	42	
Juniors	57	
Sophomores	75	
Freshmen	91	
Special Students	2	267
SCHOOL OF MEDICINE—		
Fourth Year	53	
Third Year	15	
Second Year	9	
First Year	15	
Special Students	3	95
SCHOOL OF PHARMACY—		
Second Year	2	
First Year	7	
Special Students	2	11
SCHOOL OF LAW—		
Third Year	26	
Second Year	45	
First Year	21	
Special Students	5	97
		1,211
Deduct for names counted twice		28
Summary		1,183
SUMMER SESSION (69 duplicated, 236 registered only in summer)		305

*Students in correspondence classes, in Saturday classes, in extension lecture classes, and night school and practice teaching pupils are not included in the "Summary of Attendance."

INDEX

PAGE

ANNOUNCEMENTS 9
BOARD OF REGENTS 12
Advisory Board 13
Committees of the Board 12
Officers of the Board 12
CALENDAR 8
CATALOGUE OF STUDENTS 265
COLLEGE OF COMMERCE 113
Admission 41, 115
Faculty 113
Function 114
General Statement 114
Organization 115
Requirements for Graduation 115
Subjects 115
Tuition and Fees 51
COLLEGE OF EDUCATION 117
Admission and Advanced Standing 41, 120
Curriculum, Design of 119
Diploma in Education, Bachelor's 121
Diploma in Education, Master's 125
Diplomas, State 126
Faculty 117
Function 118
General Statement 118
Graduate Work 125
Groups 122
Organization 118
Practice Teaching 124, 125
Recommendation of Teachers, Committee on 125
Requirements for Graduation 121
Schedule 122
State Diplomas 126
Training of Teachers 119

PAGE

Tuition and Fees 51
College of Engineering 153
Admission 42, 155
Advanced Standing 155
Ainsworth Electrical Standardizing Laboratory 154
Buildings 156
Chemical Engineering 166, 173
Civil Engineering 164, 167, 175
Courses 164
Degrees 156
Description of Courses 175
Electrical Engineering 164, 169, 181
Engineering Mathematics 190
Equipment 156
Faculty 153
General Engineering Drawing 163, 189
General Statement 155
Laboratories 158
Civil Engineering 157
Electrical Engineering 159
Mechanical Engineering 161
Languages 191
Library 32, 163
Mechanical Engineering 165, 171, 184
Purpose 155
Requirements for Degrees 167
Shop Work 162, 188
Tuition and Fees 52
U. S. Timber Testing Station 154, 159
College of Liberal Arts 53
Admission 41, 64
Art Collections 61
Courses of Study 63
Description of Courses 69
Biology 90
Botany 91
Chemistry 86
Comparative Literature 76
Economics 106

PAGE

Education 100
Electives in Professional Schools 111
English Language 78
English Literature 76
Ethics 97
French 74
Geology 93
Germanic Languages 72
Greek 69
Hebrew 72
History 102
Italian 76
Latin 70
Library Science and Practice 80
Logic 97
Mathematics 81
Mineralogy 93
Music 110
Oratory and Expressive Reading 80
Petrology 96
Philosophy 97
Physics 82
Physiography 93
Psychology 97
Political Science 109
Rhetoric 78
Romance Languages 74
Sanitary Science 90
Sociology 108
Spanish 75
Zoology 92
Equipment 56
Faculty 53
Farnsworth Collection of Coins 62
Graduation 64
Greek Photographs 62
Groups 66
Introductory 63
Laboratories 56

PAGE

Biological 56
Chemical 56
Geological and Mineralogical 57
Physical 56
Psychological 58
Research 58
Museum and Cabinets 59
Botanical Collection 59
Ethnological Collections 59
Guggenheim Biological Collection 59
Guggenheim Mineral Collection 59
Mineralogical and Geological Collection 59
Museum 60
Paleontological Collections 60
Photograph and Lantern Slide Cabinets 59
Zoological Collections 59
Order of Description of Courses 68
Phillips Art Collection 61
Requirements for Graduation 64
Schedule 65
Tuition and Fees 51
COLLEGES AND SCHOOLS OF THE UNIVERSITY 16
EXPENSES 50
FACULTY OF THE UNIVERSITY 17
GENERAL STATEMENT 25
Accredited Schools 46, 47
Admission 41
Associated Alumni 37
Associated Students 37
Athletics, Supervision of 39
Bennett Prize 38
Buildings 27
Chapel Exercises 36
Chautauqua 26
Christian Associations, Church Attendance 35
Dean of Women 40
Dormitories 49
Entrance 40
Establishment 25

PAGE
Expenses 50
Fees and Tuition 51
High-School Day 36
History 25
Honor Societies 34
Library 29
Location 26
Matriculation Scholarships 46
Musical Organizations 35
Oratorical and Debating Interests 38
Physical Training 39
Publications 32
Railroad Rates 50
Requirements for Admission 41
English, Description of Units in 43
Scientific Society 33
Schools Seeking to be Accredited 46
Special Students and Advanced Standing 46
Student Literary Societies and Clubs 34
Student Publications 33
Tuition and Fees 51
Woman's League 40
GRADUATE SCHOOL 131
Admission 134
Advanced Standing 135
Announcement 134
Candidates for a Degree 135
Description of Courses 139
Biology (Botany, Zoology) 147
Chemistry 146
Civil Engineering 144
Comparative Literature 142
Education 150
Electrical Engineering 145
English Language 143
English Literature 142
Geology and Physiography 148
Germanic Languages and Literatures (German, Gothic, Scandinavian) 140

PAGE

Greek Language and Literature 139
History 150
Latin Language and Literature 139
Law 151
Literature (in English) 142
Mathematics 144
Mechanical Engineering 145
Mineralogy and Petrology 149
Music 152
Philosophy 149
Physics 145
Psychology 149
Romance Languages and Literatures (French, Spanish, Italian) 142
Social Science (Economics, Sociology, Political Science) 151
Doctor's Degree 136
Engineering Degrees 137
Faculty 131
Fees 52
General Statement 134
Graduate Committee 133, 134
Instruction 137
Instructorships 135
Master's Degree 136
Record of Scholarship 135
Requirements for Degrees 136
Residence 135
Tuition and Fees 52, 135
INCIDENTAL FEE 52
LIBRARY 29
PREPARATORY COURSE FOR NURSES 130
Admission 41, 130
Course of Study 130
Credits 130
Tuition and Fees 51, 130
Function 130
SCHOOL OF LAW 235
Academic Year 237
Admission 43, 237

PAGE

Advanced Standing 237
American Law School, Development of..... 238
Building 237
Course of Study 242
Degree 238
Faculty 235
General Statement 237
Instruction in Other Departments 242
Introductory 237
Lecturers 235
Library 29, 242
The C. I. Thomson Collection 242
Method of Instruction 238
Practice 240
Schedule 243
Special Students 237
Tuition and Fees 52
SCHOOL OF MEDICINE..... 195
Admission 43, 205
Advanced Standing 206
Buildings 201, 203
Clinics 204
Courses Leading to Two Degrees 206
Denver and Gross College, Union with..... 201
Description of Courses 207
Dispensary Staff 198
Equipment in Boulder 201
Equipment in Denver 203
Faculty 195
Fees 52, 206
General Statement 201
Historical Note 201
Hospital (Boulder) 225
Fees 225
General Statement 225
Hospital Board 226
Hospital Staff 226
Hospital and Dispensary Staff (Denver)..... 198
Laboratories 202, 203

PAGE
Library 29, 204
Requirements for a Degree 206
Scholarship, The E. G. Stoiber 205
Senate 197
Session of 1913-1914 205
Summary of Hours for 1913-1914 223
School of Pharmacy 229
Admission 43, 231
Building 230
Courses 230
Degrees 230
Description of Courses 232
Equipment 230
Faculty 229
Fees 52, 230
Function 230
General Statement 230
Organization 230
Requirements for Graduation 231
Ph.C. Course 231
B.Phar. Course 232
B.S. in Phar. Course 232
Schedule 231
Tuition and Fees 52, 230
School of Social and Home Service 127
Admission 41, 128
Certificate 129
Course of Study 129
Curriculum, Design of 128
Degree 128
Faculty 127
Fees 51, 128
Function 128
Regular Courses 128
Relation to Regular B.A. Course 128
Summary of Attendance 313
Summer Session 257
Faculty 257
General Statement 258

PAGE

Accommodations 260
Additional Information 260
Admission 258
Advantages of Climate and Surroundings..... 259
Applied Sociology, Week of..... 259
Credits 258
Exercise and Recreation, Excursions..... 259
Fees 260
Lectures 259
Purpose and Organization 258
Railway Rates 260
Relation to the College of Education..... 258
Session of 1913 260
Regular Courses 261
Summer Session Students 305
Training School for Nurses 227
General Statement 227
Lectures 228
University Extension Division 247
Addresses 251
Bulletins of Investigations 255
Correspondence Study 248
Individual Work 248
Study Classes 250
Faculty 247
Director 247
Special Extension Staff 247
General Statement 248
Information, and Library Extension 254
Investigations, Bulletins of 255
Lectures and Addresses 251
Library Extension 254
Social Welfare 252
Club Programmes 253
Public Health 253
Social Centers 252
Sociological Conferences 253

UNIVERSITY OF ILLINOIS-URBANA
3 0112 111486061